

THE JOURNAL

of the Michigan State Medical Society

VOLUME 50

DECEMBER, 1951

NUMBER 12

Contributors to This Issue



DOUGLAS DONALD, M.D.,
President
Michigan Heart Association



FRANKLIN JOHNSTON,
M.D.,
Chairman, Research
Committee, Michigan
Heart Association

Research Committee Members

L. PAUL RALPH, M.D.
Grand Rapids
PAUL S. BARKER, M.D.
Ann Arbor
FRANK VANSCHOICK, M.D.
Jackson
C. D. SELBY, M.D.
Ann Arbor

Program Committee Members

GEORGE GRAYBIEL, M.D.
Caledonia
MAX R. BURNELL, M.D.
Detroit
WARREN B. COOKSEY, M.D.
Detroit
HENRY L. SMITH, M.D.
Detroit
MEYER TEITELBAUM, M.D.
Detroit
MRS. HUGH WILSON
Ann Arbor



CARLETON DEAN, M.D.,
Chairman, Program Com-
mittee, Michigan Heart
Association

Table of Contents

New Hope for Hearts. Douglas Donald, M.D.....	1353
Heart Research in Michigan. Franklin Johnston, M.D.....	1354
Education and Community Service Projects. Carleton Dean, M.D.....	1358
Blood Lipids and Human Arteriosclerosis. Harry E. Ungerleider, M.D.....	1360
Diagnosis of Pheochromocytoma. Lloyd T. Iseri, M.D., Douglas Chandler, M.D., Gordon B. Myers, M.D., and Albert J. Boyle, M.D.	1370
Angiocardiographic Observations in Some Correct- ible Types of Congenital Cardiovascular Dis- ease. M. M. Figley, M.D., A. M. Stern, M.D., J. L. Wilson, M.D., and F. J. Hodges, M.D.....	1378
Myocardial Infarction. F. Janney Smith, M.D.....	1388
Complication of Coronary Occlusive Disease. Myrton S. Chambers, M.D., Raymond E. John- son, M.D., and Michael C. Kozonis, M.D.....	1402
Some Observations on the Rheumatic Fever Con- trol Program of the Michigan State Medical Society. Leon De Vel, M.D.....	1410
Rheumatic Fever. Robert T. Lyons, M.D., and Donald S. Smith, M.D., F.A.C.P.	1416
Renal and Neurogenic Factors in Hypertension. W. J. Kenfield, David F. Bohr, R. R. Paterson and H. J. Kitto.....	1419
Operation for Coarctation of Aorta in Older Patients. F. D. Dodrill, M.D.....	1424
Know Yourself. Alfred P. Haake, Ph.D.....	1427
Editorial: The Sixty-five-retired Person Problem.....	1429
Medical Education	1429
State Hospital Administration.....	1430
Fifty Years of Accomplishment.....	1430
Formula for Freedom.....	1432
University Medical School—Review Courses.....	1434
Michigan's Department of Health.....	1436
In Memoriam	1438
Communications	1440
News Medical	1445
County Secretaries—Public Relations Conference....	1452
The Doctor's Library.....	1454
You and Your Business.....	1314
Public Relations	1322
Poliomyelitis Respirator Center.....	1324
Quo Vadimus?—Paul R. Hawley, M.D.....	1326
Cancer Comment	1328
Annual Session Echoes.....	1332
Editorial Comment	1342
Political Medicine	1346
Military Medicine	1350
Index to Volume 50.....	1459

(Copyright, 1951, by Michigan State Medical Society)

THE JOURNAL of the Michigan State Medical Society

VOLUME 50

DECEMBER, 1951

NUMBER 12

PUBLICATION COMMITTEE

FRED H. DRUMMOND, M.D., <i>Chairman</i>	Kawkawlin
WILLIAM BROMME, M.D.....	Detroit
C. A. PAUKSTIS, M.D.....	Ludington
G. W. SLAGLE, M.D.....	Battle Creek
G. B. SALTONSTALL, M.D.....	Charlevoix

Office of Publication
2642 University Avenue
Saint Paul 4, Minnesota

Editor

WILFRID HAUGHEY, M.D.
610 Post Bldg., Battle Creek, Michigan

Secretary and Business Manager of THE JOURNAL

L. FERNALD FOSTER, M.D.
Thorne Bldg., 919 Washington Ave.
Bay City, Michigan
Executive Director
WM. J. BURNS, LL.B.
606 Townsend Street, Lansing 15, Michigan

All communications relative to exchanges, books for review, manuscripts, should be addressed to Wilfrid Haughey M.D., 610 Post Bldg., Battle Creek, Michigan.

All communications regarding advertising and subscription should be addressed to Wm. J. Burns, 2642 University Avenue, Saint Paul 4, Minnesota, or 606 Townsend Street, Lansing 15, Michigan. Telephone 57125.

Copyright, 1951, by Michigan State Medical Society

Published monthly by the Michigan State Medical Society as its official journal at 2642 University Avenue, Saint Paul 4, Minnesota.

Entered at the post office at Saint Paul, Minnesota, as second class matter, May 7, 1930, under the Act of March 3, 1879.

Acceptance for mailing at special rate of postage provided for in Section 1103 Act of October 3, 1917, authorized August 7, 1918.

Yearly subscription rate, \$5.00; single copies, 50 cents. Additional postage; Canada, \$1.00 per year; Pan-American Union, \$2.50 per year; Foreign, \$2.50 per year.

PRINTED IN U.S.A.

OFFICERS OF THE SOCIETY

1951-52

President.....	OTTO O. BECK, M.D.....	Birmingham
President-Elect.....	R. J. HUBBELL, M.D.....	Kalamazoo
Secretary.....	L. FERNALD FOSTER, M.D.....	Bay City
Treasurer.....	A. S. BRUNK, M.D.....	Detroit
Speaker.....	R. H. BAKER, M.D.....	Pontiac
Vice Speaker.....	J. E. LIVESAY, M.D.....	Flint
Editor.....	WILFRID HAUGHEY, M.D.....	Battle Creek

THE COUNCIL

WILLIAM BROMME, M.D., *Chairman*, Detroit
L. W. HULL, M.D., *Vice Chairman*, Detroit
L. FERNALD FOSTER, M.D., *Secretary*, Bay City

District	Term Expires
L. W. HULL, M.D.....	1st.....1956
R. S. BREAKLEY, M.D.....	2nd.....1955
G. W. SLAGLE, M.D.....	3rd.....1955
RALPH W. SHOOK, M.D.....	4th.....1956
J. D. MILLER, M.D.....	5th.....1956
H. H. HISCOCK, M.D.....	6th.....1956
B. M. ZEMMER, M.D.....	7th.....1952
L. C. HARVIE, M.D.....	8th.....1952
G. B. SALTONSTALL, M.D.....	9th.....1952
F. H. DRUMMOND, M.D.....	10th.....1952
C. A. PAUKSTIS, M.D.....	11th.....1953
A. H. MILLER, M.D.....	12th.....1953
W. S. JONES, M.D.....	13th.....1953
B. M. HARRIS, M.D.....	14th.....1954
D. BRUCE WILEY, M.D.....	15th.....1955
W. D. BARRETT, M.D.....	16th.....1955
W. B. HARM, M.D.....	17th.....1953
WILLIAM BROMME, M.D.....	18th.....1954

OTTO O. BECK, M.D.....	President.....	Birmingham
R. J. HUBBELL, M.D.....	President-Elect.....	Kalamazoo
R. H. BAKER, M.D.....	Speaker.....	Pontiac
L. FERNALD FOSTER, M.D.....	Secretary.....	Bay City
A. S. BRUNK, M.D.....	Treasurer.....	Detroit
C. E. UMPHREY, M.D.....	Immediate Past President.....	Detroit

EXECUTIVE COMMITTEE OF THE COUNCIL

WILLIAM BROMME, M.D.....	Chairman
L. W. HULL, M.D.....	Vice Chairman
F. H. DRUMMOND, M.D.....	Chairman, Publication Committee
W. S. JONES, M.D.....	Chairman, Finance Committee
D. BRUCE WILEY, M.D.....	Chairman, County Societies Committee
R. H. BAKER, M.D.....	Speaker, House of Delegates
OTTO O. BECK, M.D.....	President
R. J. HUBBELL, M.D.....	President-Elect
L. FERNALD FOSTER, M.D.....	Secretary

SECTION OFFICERS

Medicine

D. I. Sugar, M.D.....	Detroit
<i>Chairman</i>	
D. R. Boyd, M.D.....	Muskegon
<i>Secretary</i>	

Surgery

F. P. Husted, M.D.....	Bay City
<i>Chairman</i>	
J. M. Wellman, M.D.....	Lansing
<i>Secretary</i>	

Gynecology and Obstetrics

L. C. Bosch, M.D.....	Grand Rapids
<i>Chairman</i>	
J. P. Ottoway, M.D.....	Detroit
<i>Secretary</i>	

Gastroenterology and Proctology

E. F. Sladek, M.D.....	Traverse City
<i>Chairman</i>	
R. L. Fitts, M.D.....	Grand Rapids
<i>Secretary</i>	

Delegates

W. D. Barrett, M.D., Detroit.....	1952
W. H. Huron, M.D., Iron Mountain.....	1952
R. L. Novy, M.D., Detroit.....	1952
R. A. Johnson, M.D., Detroit.....	1953
W. A. Hyland, M.D., Grand Rapids.....	1953
J. S. DeTar, M.D., Milan.....	1953

Radiology, Pathology, Anesthesiology

A. B. Stearns, M.D.....	Detroit 1
<i>Chairman (Anes.)</i>	
W. A. Stryker, M.D.....	Wyandotte
<i>Vice Chairman (Path.)</i>	
F. K. Wietersen, M.D.....	Birmingham
<i>Secretary (Rad.)</i>	

General Practice

E. M. Smith, M.D.....	Grand Rapids
<i>Chairman</i>	
C. J. Williams, M.D.....	Detroit
<i>Secretary</i>	

Ophthalmology and Otolaryngology

C. G. Wencke, M.D.....	Battle Creek
<i>Chairman (Oto.)</i>	
L. E. McCullough, M.D.....	Detroit
<i>Co-Chairman (Oph.)</i>	
F. A. Lamberson, M.D.....	Detroit
<i>Secretary (Oto.)</i>	
L. L. Loder, M.D.....	Muskegon
<i>Co-Secretary (Oph.)</i>	

DELEGATES TO A. M. A.



Pediatrics

H. L. French, M.D.....	Lansing
<i>Chairman</i>	
P. S. Bradshaw, M.D.....	Muskegon
<i>Secretary</i>	

Urology

R. A. Burhans, M.D.....	Lansing
<i>Chairman</i>	
William Bromme, M.D.....	Detroit
<i>Secretary</i>	

Public Health and Preventive Medicine

M. R. French, M.D.....	Coldwater
<i>Chairman</i>	
J. G. Molner, M.D.....	Detroit
<i>Secretary</i>	

Nervous and Mental Diseases

P. N. Brown, M.D.....	Northville
<i>Chairman</i>	
T. V. Hoagland, M.D.....	Detroit
<i>Secretary</i>	

Dermatology and Syphilology

J. R. Delaney, M.D.....	Detroit
<i>Chairman</i>	
C. J. Courville, M.D.....	Detroit
<i>Secretary</i>	

Alternates

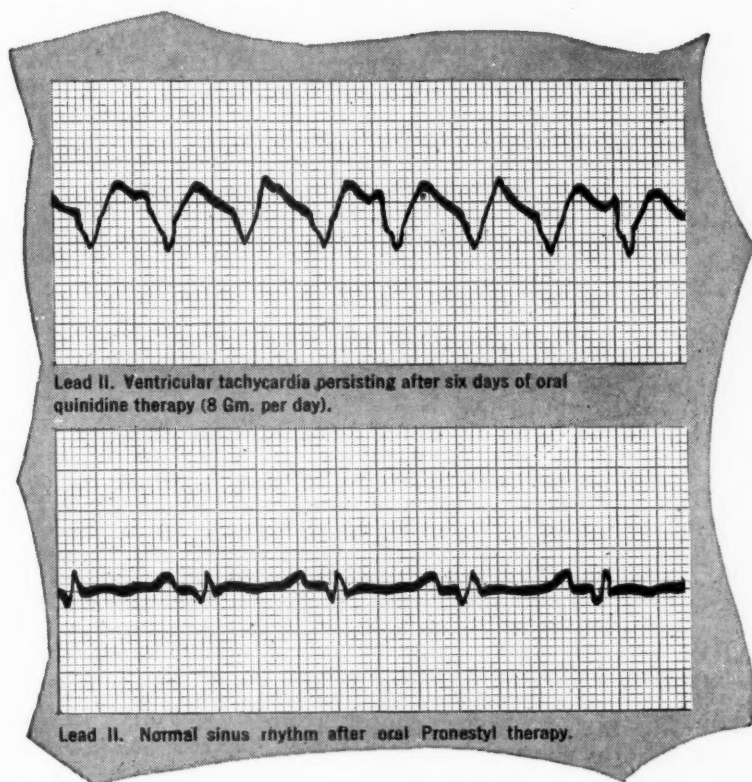
R. H. Denham, M.D., Grand Rapids.....	1952
C. I. Owen, M.D., Detroit.....	1952
E. F. Sladek, M.D., Traverse City.....	1953
E. D. Spalding, M.D., Detroit.....	1953
W. W. Babcock, M.D., Detroit.....	1953
E. C. Texter, M.D., Detroit.....	1953

a new drug . . .

for the treatment of ventricular arrhythmias

PRONESTYL *Hydrochloride*

Squibb Procaine Amide Hydrochloride



Oral administration of Pronestyl is indicated in ventricular tachycardia and runs of ventricular extrasystoles. Intravenous administration is sometimes used in ventricular tachycardia and to correct ventricular arrhythmias during anesthesia. For detailed information on dosage and administration, write for literature or ask your Squibb Professional Service Representative.

PRONESTYL IS A TRADEMARK OF E. R. SQUIBB & SONS

Pronestyl Hydrochloride Capsules, 0.25 Gm., bottles of 100 and 1000.
Pronestyl Hydrochloride Solution, 100 mg. per cc., 10 cc. vials.

SQUIBB MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1859.

Committees of the Council, 1951-52

CONTACT COMMITTEE WITH UNIVERSITY OF MICHIGAN PRESIDENT

E. I. Carr, M.D., *Chairman*.....300 W. Ottawa, Lansing
R. J. Hubbell, M.D.....252 E. Lovell, Kalamazoo
L. Fernald Foster, M.D.....919 Washington, Bay City

LIAISON COMMITTEE WITH MICHIGAN STATE PHARMACEUTICAL ASSOCIATION

J. D. Miller, M.D., *Chairman*.....Metz Bldg., Grand Rapids
C. G. Clippert, M.D.....Grayling
C. W. Colwell, M.D.....706 Citizens Bank Bldg., Flint
E. G. Merritt, M.D.....10 Peterboro, Detroit
G. H. Rigerink, M.D.....1110 Am. National Bank, Kalamazoo

PERMANENT CONFERENCE COMMITTEE WITH MICHIGAN HOSPITAL ASSOCIATION AND MICHIGAN NURSING CENTER ASSOCIATION

E. G. Merritt, M.D., *Chairman*.....10 Peterboro, Detroit
C. G. Clippert, M.D.....Grayling
J. E. Livesay, M.D.....Mott Foundation Bldg., Flint
J. D. Miller, M.D.....Metz Bldg., Grand Rapids
G. J. Moriarty, M.D.....3001 W. Grand Blvd., Detroit
Sarah S. Schooten, M.D.....954 Maccabees Bldg., Detroit
E. M. Vardon, M.D.....12897 Woodward Ave., Detroit
J. A. Witter, M.D.....344 Glendale Ave., Detroit

SPECIAL COMMITTEE ON EDUCATION

L. W. Hull, M.D., *Chairman*.....1701 David Whitney Bldg., Detroit
L. Fernald Foster, M.D.....919 Washington, Bay City
W. S. Jones, M.D.....Menominee
Arch Walls, M.D.....17201 W. McNichols Rd., Detroit

ADVISORY COMMITTEE TO BUREAU OF MATERNAL AND CHILD WELFARE

Frank Van Schoick, M.D., *Chairman*.....419 W. High, Jackson
C. F. Brunk, M.D.....7815 E. Jefferson, Detroit
A. M. Campbell, M.D.....Metz Bldg., Grand Rapids
H. A. Furlong, M.D.....926 Riker Bldg., Pontiac
W. G. Hoebeke, M.D.....420 John, Kalamazoo
R. M. Kempton, M.D.....333 S. Jefferson, Saginaw
R. B. Kennedy, M.D.....2108 David Broderick Tower, Detroit
W. R. Klunzinger, M.D.....420 W. Ottawa, Lansing
S. L. Loupee, M.D.....Dowagiac
R. H. Pino, M.D.....208 David Whitney Bldg., Detroit
L. P. Sonda, M.D.....544 David Whitney Bldg., Detroit

COMMITTEE ON AWARDS

L. Fernald Foster, M.D., *Chairman*.....919 Washington, Bay City
Wilfrid Haughey, M.D.....610 Post Bldg., Battle Creek
R. J. Hubbell, M.D.....252 E. Lovell, Kalamazoo

COMMITTEE ON BLOOD BANKS

D. H. Kaump, M.D., *Chairman*.....Providence Hospital, Detroit
W. B. Cooksey, M.D.....62 W. Kirby, Detroit
R. H. Holmes, M.D.....Hackley Union Bank Bldg., Muskegon
A. A. Humphrey, M.D.....914 Security Bank Bldg., Battle Creek
Hazel R. Prentice, M.D.....458 W. South, Kalamazoo

COMMITTEE ON COURSES IN MEDICAL ECONOMICS

E. F. Sladek, M.D., *Chairman*.....Traverse City
L. Fernald Foster, M.D.....919 Washington, Bay City
E. A. Osius, M.D.....901 David Whitney Bldg., Detroit
J. R. Rodger, M.D.....Bellaire
R. W. Teed, M.D.....215A S. Main, Ann Arbor

COMMITTEE ON EMERGENCY MEDICAL SERVICE

W. H. Gordon, M.D., *Chairman*.....1102 David Whitney Bldg., Detroit
W. H. Alexander, M.D.....Iron Mountain
R. F. Hague, M.D.....210 E. Court, Flint
S. W. Hartwell, M.D.....452 W. Western Ave., Muskegon
Louis Jaffe, M.D.....10 Witherell, Detroit
D. H. Kaump, M.D.....Providence Hospital, Detroit
M. L. Lichter, M.D.....Melvindale
J. A. Ramsey, M.D.....Alpena

JOINT COMMITTEE ON STUDY OF MEDICAL PRACTICE ACT

W. B. Harm, M.D., *Chairman*.....5884 W. Vernor Highway, Detroit
L. A. Drolett, M.D.....Prudden Bldg., Lansing
Mr. J. Joseph Herbert.....127 S. Cedar, Manistiquie
J. E. Livesay, M.D.....Mott Foundation Bldg., Flint
J. D. Miller, M.D.....Metz Bldg., Grand Rapids

COMMITTEE ON RURAL MEDICAL SERVICE

E. S. Oldham, M.D., *Chairman*.....Breckenridge
W. B. Crane, M.D.....420 S. Rose, Kalamazoo
J. H. Fyvie, M.D.....Manistique
O. R. MacKenzie, M.D.....128 Common, Walled Lake
W. H. Mast, M.D.....Tecumseh
C. E. Merritt.....Manton
E. S. Parmenter.....Alpena
J. R. Rodger, M.D.....Bellaire
F. R. Smith, M.D.....Lake City
W. F. Strong, M.D.....Ontonagon
O. D. Stryker, M.D.....Macomb County Bldg., Mt. Clemens
H. B. Zemmer, M.D.....Lapeer

ADVISORY COMMITTEE TO THE CANCER FOUNDATION OF THE MICHIGAN FEDERATION OF BUSINESS AND PROFESSIONAL WOMEN'S CLUBS

E. I. Carr, M.D., *Chairman*.....300 W. Ottawa, Lansing
C. H. Keene, M.D.....Kaiser-Frazer Corp., Ypsilanti
H. M. Nelson, M.D.....3001 W. Grand Blvd., Detroit

SPECIAL COMMITTEE TO MEET WITH MICHIGAN SOCIAL WELFARE COMMISSION

G. W. Slagle, M.D., *Chairman*.....140 N.E. Capitol, Battle Creek
Wilfrid Haughey, M.D.....610 Post Bldg., Battle Creek
R. J. Hubbell, M.D.....252 E. Lovell, Kalamazoo
L. G. Christian, M.D., "Ex officio" Representing Welfare Commission.....108 E. St. Joseph, Lansing

COMMITTEE ON ATOMIC AND ALLIED PROCEDURES

A. A. Humphrey, M.D., *Chairman*.....914 Security Bank Bldg., Battle Creek
H. F. Becker, M.D.....Route 3, Box 303A, Battle Creek
O. A. Brines, M.D.....1512 St. Antoine, Detroit
J. E. Cole, M.D.....344 Glendale Ave., Detroit
K. H. Corrigan, Ph.D.....Harper Hospital, Detroit
Dr. J. J. Grebe.....Dow Chemical Co., Midland
L. E. Holly, M.D.....817 N. Second, Muskegon
Trajan Leucutia, M.D.....Harper Hospital, Detroit
H. B. Lewis, Ph.D.....University of Michigan, Ann Arbor
M. L. Lichter, M.D.....2900 Oakwood Blvd., Melvindale
A. B. McGraw, M.D.....2799 W. Grand Blvd., Detroit
Dr. W. L. Mallmann.....Michigan State College, E. Lansing
W. J. Nungester, M.D.....University of Michigan, Ann Arbor
Dr. L. L. Quill.....Michigan State College, E. Lansing

SUB-COMMITTEE ON MEDICAL USES OF ATOMIC ENERGY

L. E. Holly, M.D., *Chairman*.....817 N. Second, Muskegon

SUB-COMMITTEE ON INDUSTRIAL USES AND HAZARDS OF ATOMIC ENERGY

K. H. Corrigan, Ph.D., *Chairman*.....Harper Hospital, Detroit

SUB-COMMITTEE ON MEDICAL AND TECHNICAL DEFENSE IN MODERN SCIENTIFIC WARFARE

A. A. Humphrey, M.D., *Chairman*.....914 Security Bank Bldg., Battle Creek

MEDICAL PROCUREMENT ADVISORY COMMITTEE

C. I. Owen, M.D., *Chairman*.....Grace Hospital, Detroit
M. J. Capron, M.D.....65 W. Michigan, Battle Creek
C. H. Frantz, M.D.....1810 Wealthy St. S.E., Grand Rapids
W. H. Huron, M.D.....Iron Mountain
E. C. Miller, M.D.....101 W. John, Bay City
G. C. Penberthv. M.D.....1515 David Whitney Bldg., Detroit
J. R. Rodger, M.D.....Bellaire
H. H. Stryker, M.D.....Borgess Hospital, Kalamazoo

SPECIAL COMMITTEE TO MEET WITH THE UNDERWRITERS ASSOCIATION OF MICHIGAN

Ralph Wadley, M.D., *Chairman*.....333 Seymour St., Lansing
L. Fernald Foster, M.D.....919 Washington, Bay City
J. S. Rozan, M.D.....Bank of Lansing Bldg., Lansing
Mr. H. W. Brennenman.....606 Townsend, Lansing

LIAISON COMMITTEE WITH MICHIGAN VETERANS ORGANIZATIONS

William Bromme, M.D., *Chairman*.....318 Professional Bldg., Detroit
R. H. Baker, M.D.....1110 Peoples Bank Bldg., Pontiac
G. W. Slagle, M.D.....140 N.E. Capitol, Battle Creek
Mr. J. W. Castellucci (Advisor).....Michigan Medical Service, Washington Blvd. Bldg., Detroit

(Continued on Page 1312)



All Children Can Benefit from *this* Protective Hot Drink at Breakfast

In its widely distributed leaflet No. 268, "Eat a Good Breakfast," the U. S. Dept. of Agriculture states: "Summer or winter, there's something hot, as a rule, in a good breakfast.... Something hot is cheering and tones up the whole digestive route."



The problem of encouraging children to eat an adequately protective breakfast finds easier solution when Ovaltine in hot milk is recommended as a breakfast beverage. Many children clamor for a hot drink at the morning meal, and hot Ovaltine is the right kind of drink to recommend.

A cup of hot Ovaltine makes an excellent contribution of virtually all essential nutrients, adding substantially to the nutritional start for the day. It also serves in a gustatory capacity by enhancing the appeal of breakfast and making other foods more inviting.

The nutrient contribution made by a cup of Ovaltine is apparent from the table below. Note the wealth of essentials added to the nutritional intake by making the simple recommendation of adding a cup of hot Ovaltine to the child's breakfast.

THE WANDER COMPANY, 360 N. MICHIGAN AVE., CHICAGO 1, ILLINOIS

Ovaltine

Here are the nutrients that a cupful of hot Ovaltine, made of
½ oz. of Ovaltine and 8 fl. oz. of whole milk,* provides:

PROTEIN	10.5 Gm.	IRON	4 mg.	NIACIN	2.3 mg.
FAT	10.5 Gm.	COPPER	0.2 mg.	VITAMIN C	10 mg.
CARBOHYDRATE	22 Gm.	VITAMIN A	1000 I.U.	VITAMIN D	140 I.U.
CALCIUM	370 mg.	VITAMIN B ₁	0.39 mg.	CALORIES	225
PHOSPHORUS	315 mg.	RIBOFLAVIN	0.7 mg.		

*Based on average reported values for milk.

Committees of the Council

(Continued from Page 1310)

COMMITTEE TO STUDY "LITTLE HOOVER" COMMISSION REPORT

J. E. Livesay, M.D., *Chairman*.....619 Mott Foundation Bldg., Flint
O. J. Johnson, M.D.....207 N. Walnut, Bay City
J. G. Molner, M.D.....334 Bates, Detroit
H. Marvin Pollard, M.D.....University Hospital, Ann Arbor
S. B. Winslow, M.D.....612 Post Building, Battle Creek

LIAISON COMMITTEE WITH MICHIGAN MEDICAL SERVICE

William Bromme, M.D., *Chairman*.....10 Peterboro, Detroit
R. S. Breakey, M.D.....1211 Bank of Lansing Bldg., Lansing
L. C. Carpenter, M.D.....Metz Building, Grand Rapids
B. M. Harris, M.D.....220 Pearl Street, Ypsilanti
W. H. Huron, M.D.....107 E. "A" Street, Iron Mountain
G. W. Slagle, M.D.....1206 Security Bank Bldg., Battle Creek
D. B. Wiley, M.D.....45310 Van Dyke, Utica

HOSPITAL RELATIONS COMMITTEE

L. W. Hull, M.D., *Chairman*.....1701 David Whitney Bldg., Detroit
A. H. Kretchmar, M.D.....608 First National Bldg., Flint
J. W. Logie, M.D.....Metz Building, Grand Rapids
W. S. Reveno, M.D.....951 Fisher Building, Detroit
C. E. Umphrey, M.D.....13331 Livernois, Detroit
Ralph Wadley, M.D.....333 Seymour Street, Lansing

COMMITTEE ON STUDY OF GROUP MALPRACTICE INSURANCE

W. S. Jones, M.D., *Chairman*.....Menominee
A. S. Brunk, M.D.....(mailing address: R. 1, Belle River,
Ontario, Canada) Detroit
L. Fernald Foster, M.D.....919 Washington, Bay City
Mr. J. Joseph Herbert.....127 S. Cedar, Manistique

COMMITTEE ON MODEL CODE FOR M.D. ANNOUNCEMENTS

D. B. Wiley, M.D., *Chairman*.....Utica
W. D. Barrett, M.D.....1553 Woodward Ave., Detroit
J. E. Livesay, M.D.....Mott Foundation Bldg., Flint

COMMITTEE TO CO-OPERATE WITH MICHIGAN HEALTH COUNCIL RE PERIODIC HEALTH APPRAISAL

P. S. Barker, M.D.....University Hospital, Ann Arbor
J. G. Bielawski, M.D.....5119 St. Lawrence Ave., Detroit
W. B. Cooksey, M.D.....62 W. Kirby, Detroit
J. S. DeTar, M.D.....Milan
D. C. Ensign, M.D.....Henry Ford Hospital, Detroit
W. A. Irvin, M.D.....Providence Hospital, Detroit
W. M. LeFevre, M.D.....289 W. Western Avenue, Muskegon
J. J. Lightbody, M.D.....501 David Whitney Bldg., Detroit
H. W. Porter, M.D.....505 Wildwood Avenue, Jackson
F. L. Rector, M.D.....606 Townsend Street, Lansing
W. S. Reveno, M.D.....951 Fisher Bldg., Detroit
R. F. Salot, M.D.....713 Monitor-Leader Bldg., Mt. Clemens
E. F. Sladek, M.D.....123 E. Front St., Traverse City

Standing Committees

FINANCE COMMITTEE

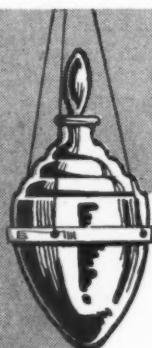
W. S. Jones, M.D., *Chairman*.....Menominee
W. D. Barrett, M.D.....Detroit
L. W. Hull, M.D.....Detroit
A. H. Miller, M.D.....Gladstone
J. D. Miller, M.D.....Grand Rapids
H. B. Zemmer, M.D.....Lapeer

PUBLICATION COMMITTEE

F. H. Drummond, M.D., *Chairman*.....Kawkawlin
H. H. Hiscock, M.D.....Flint
C. A. Paukstis, M.D.....Ludington
G. B. Saltonstall, M.D.....Charlevoix
G. W. Slagle, M.D.....Battle Creek

COUNTY SOCIETIES COMMITTEE

D. B. Wiley, M.D., *Chairman*.....Utica
R. S. Breakey, M.D.....Lansing
W. B. Harm, M.D.....Detroit
B. M. Harris, M.D.....Ypsilanti
L. C. Harvie, M.D.....Saginaw
Ralph W. Shook, M.D.....Kalamazoo



DEPENDABLE

Pharmaceuticals for the Profession

All Meyer products are submitted to the most rigid controls and assays to guarantee potencies, stability and purity at all times. Constant research is conducted to develop products of known therapeutic value with the greatest patient acceptance.



ampoules
Aminophylline



ampoules
Sodium Ascorbate



MEYER CHEMICAL COMPANY, INC.

PHARMACEUTICAL MANUFACTURERS

DETROIT 24, MICHIGAN



**PICKER has
a handy
x-ray technic
pocket guide
for you . . .**



You won't have to carry
technics in your head, or take
time out to thumb through a
book when you have this compact
guide handy. It's *small* enough to tuck
into your pocket, yet *complete*
enough to supply accurate technics for
any body part you may want to
radiograph. General information,
quick-reading conversion tables, darkroom
pointers—even inch and centimeter rules—
they're all here, compactly presented for ready
reference. The Picker technic guide is printed
on heavy vinylite plastic; it will last a long, long time.

Your local Picker representative has one for you . . . or we'll
be glad to send it: the coupon here will bring it with our compliments.



one source for everything in x-ray

DETROIT 2, MICH., 1068 Maccabees Building
BATTLE CREEK, MICH., 231 Eldred Street

DECEMBER, 1951

PICKER X-RAY CORP.

25 South Broadway, White Plains, N. Y.

Please send me a Picker pocket slide guide for radiography.

NAME _____

ADDRESS _____

CITY _____ STATE _____

GRAND RAPIDS, MICH., 48 Honeoye
FLINT, MICH., 4005 Du Pont Street

1313

Say you saw it in the *Journal of the Michigan State Medical Society*

You and Your Business

MEDICAL MEETINGS AND CLINIC DAYS

A list of known medical meetings and clinic days, sponsored by county medical societies and other physicians' groups in Michigan, follows:

1952	
Jan. 30	Mt. Carmel Mercy Hospital Clinic Day Detroit
March 12-14	MICHIGAN CLINICAL INSTITUTEDetroit
March 14	Michigan Heart Day (part of M.C.I.) Detroit
Spring	MSMS Postgraduate Extramural Courses State-wide
April 3	Jackson County Medical Society's Clinic Day Jackson
April 9	Genesee County Medical Society's Cancer DayFlint
April	Highland Park Physicians Club Clinic Highland Park
April 24-25	International College of Surgeons (Regional Meeting for Seven States) Detroit
May 1	Ingham County Medical Society's Clinic Day Lansing
May 7	Third Michigan Industrial Health DayFlint
May 14	Wayne University Medical Alumni Clinic Day and Reunion.....Detroit
June 9-13	AMA Annual Session.....Chicago
July	Annual Collier-Penberthy Medical Surg- ical ConferenceTraverse City
August	Third Annual Clinic, Central Michigan Committee, ACS Michigan Committee on Trauma, plus Michigan National Guard Medical Personnel, and Michi- gan Society of North Central Coun- tiesGrayling
Sept. 24-26	MICHIGAN STATE MEDICAL SOCIETY ANNUAL SESSION Detroit
Autumn	MSMS Postgraduate Extramural Courses State-wide

Additions to this list of meetings are invited by the Editor of JMSMS, in order to make this monthly announcement complete and accurate.

WORD GETS AROUND ABOUT MSMS ACTIVITIES

What they are saying about the new 16 mm. sound and color film, "To Save Your Life":

1. Donald G. Anderson, M.D., Secretary, Council on Medical Education and Hospitals, American Medical Association—"It is the best movie I have yet seen for portraying to the high school and college student the path that must be followed to become a physician."

2. Ralph P. Creer, Secretary, Committee on Medical Motion Pictures, American Medical Association—"an excellent job with a very small budget."

What they are saying about the pamphlet "Planning Your Career"

3. Helen Yast, Assistant Librarian, American Hospital Association—"This has proved to be one of the most popular items we ever offered our members."

4. Captain Patrick J. Pomphrey, Headquarters, U.S.A.F. Hospital, Offutt Air Force Base, Omaha, Nebraska—"We were able to obtain, through the American Hospital Association, a loan copy of your brochure, 'Planning Your Career.' Our entire personnel displayed such interest in the pamphlet that we delayed returning it for some time."

5. S. Tanner Stafford, Hospital Administrator, The Florida Agricultural and Mechanical College, Tallahassee, Florida—"I would appreciate receiving a copy of the most excellently done brochure, 'Planning Your Career as a Medical Associate.' . . . this would be of invaluable aid to us."

GREAT GROWTH OF VOLUNTARY PLANS

Voluntary sickness cover plans show big gains: surgical expense insurance was owned in 1950 by 54,477,000 persons as compared with 41,143,000 the previous year (an increase of 32 per cent).

Medical expense coverage gained 28 per cent from 16,862,000 to 21,589,000.

The Health Insurance Council estimates that the 1950 total was equivalent to coverage on approximately 60 per cent of employed civilian population of the United States.

(Continued on Page 1316)

For every requirement of
thorough rectal examination
and treatment

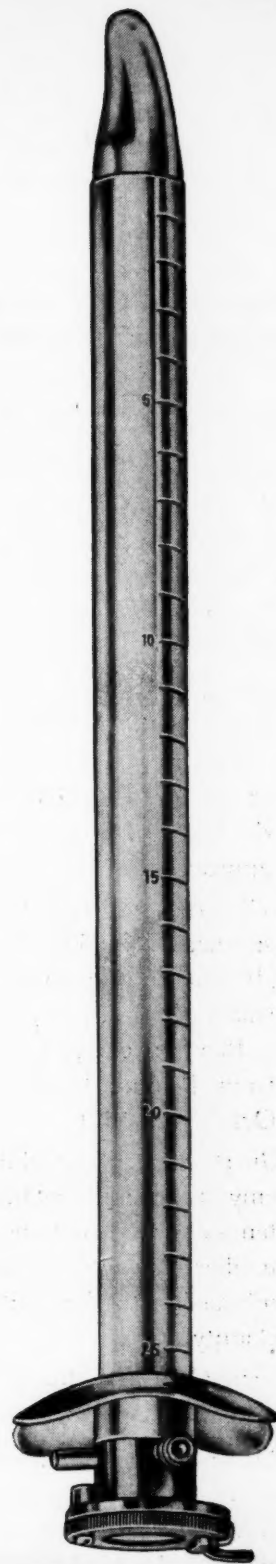
WELCH ALLYN DISTALLY ILLUMINATED PROCTOSCOPES AND SIGMOIDOSCOPES

Abundant illumination is provided directly at the area under observation, together with an unobstructed view for diagnosis or treatment. The inner tube is optically designed to reduce the annoying glare usually found in this type of instrument. The obturator tip is tapered and curved to facilitate the passage of the instrument through the sphincter muscle and by the prostate gland region.



No. 308 SIGMOIDOSCOPES—21 mm. diameter, 25 cm. length, with inflating bulb\$30.00

No. 318 SET—Contains No. 308 sigmoidoscope, No. 300 proctoscope, No. 304 infant proctoscope, No. 342 biopsy punch, No. 280 medium anoscope, rectal probe and hook, No. 700 battery handle, No. 725 cord and inflating bulb, all in attractive case.....\$169.50



"For Finer Equipment"

Randolph Surgical

SUPPLY COMPANY

PHYSICIANS AND HOSPITAL SUPPLIES

60 COLUMBIA ST. WEST • WOODWARD 1-4180 • FOX THEATRE BLDG. • DETROIT 1, MICH.

DECEMBER, 1951

Say you saw it in the Journal of the Michigan State Medical Society

1315

*(Continued from Page 1314)***INDUSTRIAL HEALTH DAY**

The Third Michigan Industrial Health Day will be held in Flint on May 7, 1952. The scientific meeting will be at Hurley Hospital, and the dinner will be at the Durant Hotel, Flint.

HIGHLIGHTS OF EXECUTIVE COMMITTEE OF THE COUNCIL OCTOBER 17, 1951

Seventy-one (71) items were considered by the Executive Committee of The Council at its October meeting held in the new MSMS "home" at 606 Townsend Street, Lansing. Chief in importance were:

- Monthly financial reports were presented, studied and approved. Bills payable were inspected and authorized to be paid. Annual and quarterly (to September 30, 1951) financial reports of the Cancer Control Committee were studied and approved.
- 606 Townsend Street, Lansing: (a) Straight insurance of \$59,000 (\$49,000 on the building and \$10,000 on the contents) on a five-year term was authorized; (b) The Cancer Control Committee Secretary, F. L. Rector, M.D., moved from Jackson to the MSMS headquarters on October 3, 1951.
- Guest editorial for Bulletin of American Academy of General Practice of Wayne County, written as per instructions of The Council on September 23, was presented and approved for submission to the Editor of BAAGP of Wayne County.
- Legal Counsel J. Joseph Herbert reported on two matters having to do with taxation.
- Public Relations Counsel H. W. Brennenman presented a plan of distribution of the new MSMS film "To Save Your Life"; also on the possibility of the MSMS TV show "It's Your Life" being sponsored for one year by a Detroit firm. The Executive Committee of The Council authorized contacts with the 15 largest county medical societies of Michigan re holding "Formula for Freedom Nights."
- Adult Education. A long-range plan for co-operation with the adult education system of Michigan in the purveying of health information to the people participating in adult education classes was presented and approved.
- Periodic Health Appraisal. A committee to co-operate with the Michigan Health Council on this subject, to be known as the "Joint Committee (MSMS-MHC) to Study Periodic Health Appraisal" was approved. The recommendation of E. F. Sladek, M.D., of Traverse City that a motion picture presenting the periodic health appraisal idea be produced was referred to this new committee as well as to the Cinema Committee (a sub-committee of the MSMS Public Relations Committee).
- Sarah S. Schooten, M.D., Detroit, was renominated as MSMS representative to the Committee on Careers in Nursing, a Committee of the Michigan Nursing Center Association; J. S. DeTar, M.D., Milan, was appointed as Delegate and R. W. Teed, M.D., Ann Arbor, was appointed as Alternate to the Michigan Health Council, as MSMS representatives.
- Two resolutions (one from Arkansas Medical Society re Veterans Administration, and one from the Ohio State Medical Association re permanent site for AMA Clinical Session of House of Delegates) were referred to Michigan's Delegates to the AMA House of Delegates.
- Resolution of appreciation from Woman's Auxiliary to Michigan State Medical Society was read and received with thanks.
- Report of Special Committee (of The Council) on Selection of Expert Witnesses was presented and approved.
- Beaumont Memorial Restoration: President Otto O. Beck, M.D., Birmingham, stated this is an opportunity for doctors of medicine to bring to themselves great credit by making an all-out effort in the 1951-52 MSMS year to secure sufficient money to restore the old American Fur Company store on Mackinac Island to make it into a Beaumont Memorial or Museum. Dr. Beck's recommendations for a campaign and necessary publicity were approved.
- Report of Committee on Study of Group Malpractice Insurance (a committee of The Council), was presented and approved.
- The Committees of The Council for the year 1951-52, as appointed by Chairman William Bromme, M.D., Detroit, were approved by the Executive Committee of The Council.
- State Health Commissioner A. E. Heustis, M.D.,

(Continued on Page 1318)


PRIODAX[®]
(brand of Iodoalphonic Acid U.S.P.)
CHOLECYSTOGRAPHY

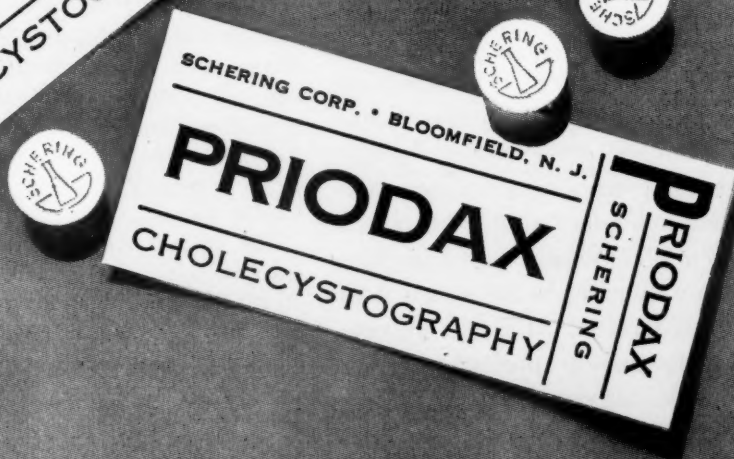
presents
gallbladder shadows of great clarity
free from confusing shadows

assisted by
a simple preparatory routine
and
tolerance of the highest degree.



Schering CORPORATION • BLOOMFIELD, N. J.

PRIODAX



HIGHLIGHTS OF THE COUNCIL

(Continued from Page 1316)

discussed the new "Rules and Regulations for Hospitals with Maternity Departments," as developed by the State Department of Health in accordance with the 1951 law.

CONSULTANT'S SERVICES

Does an attending physician have authority to engage on behalf of his patient the services of a consultant, without express authority or consent of the patient? As far as we are able to determine, this specific question has never been directly passed on by any appellate court. There are no cases in point in the Michigan Reports. Nor do encyclopedias or text books comment on the exact point.

One must, therefore, have resort to general principles of the law of agency and the doctor-patient relationship to reach a reasonable conclusion, which, however, may not coincide with the opinion of a court were the situation brought into litigation.

In many cases, when a patient engages a doctor to treat and attend him, there is implied authority to commit the patient to certain expenses and even services by others, e.g., making x-ray plates by technicians or roentgenologists, or in surgical operations, the services of anesthetists and surgical nurses. Certainly, when a medical emergency arises and the patient is unconscious, or is not in condition to discuss the situation, the attending physician has implied authority to do on humanitarian grounds what in his judgment is medically indicated. However, there is grave doubt that in ordinary cases the attending physician is authorized to engage a consultant without express consent of the patient, if the patient is in condition to give such authority or consent. In other words, it is highly questionable that the mere engagement of a physician to diagnose or treat a patient gives such physician blanket authority to engage other physicians without the patient's express consent. As pointed out, emergent or peculiar circumstances may tend to ameliorate this conclusion. And the mere fact that the patient does not object when a consultant examines him is not sufficient, in my opinion, to be regarded as consent to pay for his services. It is not uncommon for physicians to call in professional colleagues to view unusual cases, and a patient can-

not be presumed to have engaged the services of an additional physician merely because he does not object to his viewing or even examining him.

To obviate the troublesome question of whether or not the patient shall be chargeable for consultant's services, it is recommended that, whenever possible, express consent be obtained from the patient to engage a consultant on his behalf.

(Excerpted from opinion by J. JOSEPH HERBERT, MSMS Legal Counsel)

CONFERENCE ON PHYSICIAN PLACEMENT

A conference dealing with physician placement and the distribution of physicians in general was held at AMA headquarters in Chicago on October 20.

The conference, called by the AMA Council on Medical Service, was attended by representatives of the American Academy of General Practice, the Association of American Medical Colleges and several councils and bureaus of the AMA, as well as by representatives from the following ten state medical societies which have effective placement programs in operation: Illinois, Kansas, Michigan, Wisconsin, Missouri, Nebraska, Ohio, Texas, Virginia and Mississippi.

Discussions covered all aspects of physician placement problems, including maintenance of lists of communities seeking physicians and of lists of physicians seeking locations; co-operation with medical schools and hospitals in an effort to interest students, interns and residents in general practice in small communities; ways and means of assisting communities in developing projects which will attract qualified physicians; relationship between the AMA Physicians Placement Service and the state placement services, and the feasibility of a revolving fund to assist physicians in locating in areas where they are most needed.

The conclusions agreed upon are to be discussed in November by the council's Committee on Extension of Hospitals and Other Facilities. Ralph A. Johnson, M.D., of Detroit, a member of this committee, served as chairman of the conference.

VOLUNTARY SICKNESS COVER PLANS SHOW BIG GAINS

Reflecting the continuing desire of Americans to choose their own methods of meeting the costs of illness, all forms of voluntary health protection scored tremendous gains in 1950 to set new records, the Health Insurance Council reports in the fourth annual edition of its Survey of Accident and Health Coverage in the United States.

The council survey shows that hospital expense coverage, which is the form most widely sold, was held by 76,961,000 persons at the end of 1950, a gain of 17% over the figure of 66,044,000 estimated for the year previous. The number of persons protected under hos-

(Continued on Page 1320)

**Table
without
salt,
mouth
without
saliva —**

Randle Cotgrave
(1611)¹



The thought of meals without salt is unappealing to most patients who are placed on a salt-restricted diet.

The prescription of Neocurtasal can prove to be a most encouraging measure.

Neocurtasal is a "trustworthy, nonsodium-containing salt substitute"² designed to make the low sodium diet palatable.

For all salt (sodium)-free diets—Neocurtasal may be used wherever sodium restriction is indicated: congestive heart failure, hypertension, arteriosclerosis, pregnancy (to forestall tendency to fluid retention). It contains potassium chloride, ammonium chloride, potassium formate, calcium formate, magnesium citrate and starch. Potassium content 36%; chloride 39.3%; calcium 0.3%; magnesium 0.2%.

Neocurtasal[®]

SALT WITHOUT SODIUM

Available in 2 oz. shakers and 8 oz. bottles.

Winthrop-Stearns INC.
NEW YORK 18, N. Y. WINDSOR, ONT.

Neocurtasal, trademark reg. U. S. & Canada

1. From Burton Stevenson's "Home Book of Proverbs, Maxims and Familiar Phrases:" Macmillan Co., 1948, p. 2028.
2. Heller, E. M.: The Treatment of Essential Hypertension. *Canad. Med. Assn. Jour.*, 61:293-299, Sept., 1949.

VOLUNTARY SICKNESS COVER PLANS SHOW BIG GAINS

(Continued from Page 1318)

pital coverage has more than doubled since the end of the war.

Surgical expense insurance is owned by 54,477,000 as compared with 41,143,000 a year earlier, an increase of 32 per cent.

Medical expense coverage gained 28 per cent from 16,862,000 to 21,589,000.

Weekly indemnity coverage also increased, and in 1950 was provided to 37,293,000 persons against 34,136,000 at the end of 1949, a gain of 9 per cent.

The council estimates that the 1950 total was equivalent to coverage on approximately 60 per cent of employed civilian population. The figures do not include the individuals covered solely by government insurance under compulsory plans, but do include all insurance companies, Blue Cross, Blue Shield, fraternal societies, local medical societies, industry, universities and others. —Insurance Economic Surveys, October, 1951.

SIXTEEN THOUSAND IN NINETY FOREIGN LANDS DRAWING \$6 MILLION A YEAR

Angelo Paisano has worked hard in America. Now he's sixty-five and he has gone back to Italy to live on his Social Security pension. He could be a big shot in his native village.

Angelo is one of some 16,000 persons who drew \$6,309,000 monthly pension checks in ninety countries outside the United States last year. That averages a little over \$39 a month—not so much, figured in American living standards. But despite higher living costs in Italy and everywhere else what a man must have in those places to keep up with the neighbors is much less than it is in the States.

If Angelo, who you must understand, signore, is a type, not a real person, is a single man and worked for low wages only part of the time since taxes began to be taken from his pay envelope in 1937, he will probably draw the minimum—\$20 American. At present exchange rates he gets 12,500 lira for his \$20. If he draws the average of \$39 a month, the local bank gives him some 25,000 lira. Not too bad, when you consider that a highly skilled mechanic in Italy is paid around 37,000 lira monthly and by his standards keeps a family fairly well on it.

But even with the minimum of \$20, if Angelo has a wife who is also past 65, they get \$30 a month American, or nearly 19,000 lira.

If Angelo has been lucky and has been paid better than \$3,000 a year in America since 1937, and has worked steady all the time, he will get the maximum annuity payable today, \$68.50. Since his wife is entitled to 50 per cent additional, their monthly income in good U. S. dollars will be \$102.50, or the magnificent sum of 64,000 lira. That's big dough in Angelo's home town.

Italy had the greatest number of U. S. social pensioners during the last month of account, June, when 5,245 persons got \$210,387 during the month. Canada

was second with 3,205 persons drawing \$127,090. Greece was third with 1,249 persons getting \$46,209.

Other principal countries, with number of pensioners and dollar totals for that month, were: United Kingdom and Northern Ireland, 908 persons, \$37,468; Sweden, 553 persons, \$24,637; Ireland, 519 persons, \$21,890; Norway, 510 persons, \$21,533; Yugoslavia, 427 persons, \$15,220; Mexico, 531 persons, \$14,611; France, 154 persons, \$6,585, and Japan, 174 persons, \$5,989. (*Chicago Daily News*, Sept. 22, 1951).—Insurance Economic Surveys, October, 1951.

NIGHT CLUBS AND TAXES

President Truman in a speech at the dedication of the new \$25,000,000 government General Accounting Office building in Washington said:

"A man will go to a night club and throw away \$30 or \$40, and think nothing of it, but let him get a tax bill for \$30 and listen to him scream.

"I would not want any one to give up his time-honored right to complain about paying taxes. If people couldn't blow off steam that way sometimes, they might explode."

How many persons with an annual income tax of \$30 are prospective night club frequenters? Under the 1950 Federal Income tax schedule a single man with no dependents would have an annual income of not over \$850.00, or \$16.34 per week—not a night club prospect! A married man with only his wife as dependent could earn \$1,525 per year, (\$29.53 per week). A married man with two children to pay a \$30 income tax would have to earn \$2,850 per year (\$54.80 per week). The plutocrat with the most earnings to qualify and to scream about a \$30 tax bill would be a man listing seven dependents, and earning \$4,800.00 per year. These figures were supplied Congressman Paul Shafer, of Michigan.

GOVERNMENT CIVILIAN EMPLOYEES

Senator Byrd (D.Va.), Chairman of the Joint Committee on Reduction of Non-Essential Federal Expenditures, reports:

The total number of civilian employees in the Executive branch of the Government is now past the two and one-half million mark for the first time in five years. The civilian payroll for the fiscal year which ended June 30, 1951, totaled \$7,719,076,000, a 17 per cent increase over the previous year. Indications are that the payroll this current year will approach, if not exceed, \$10 billion—compared with the World War II peak of \$8.3 billion.

Of course, there are thousands of necessary, conscientious and capable federal employees. But there are also thousands of unnecessary ones, thousands who lack the competence to make good in private employment, thousands who waste hours in department cafeterias and lounges or in needless paper-shuffling. And one of the most disturbing features of the situation is the failure of the present Congress to approve payroll reduction amendments to appropriation bills.

physiologic "booster" to counter stress

In situations of bodily stress, the output of adrenal cortical hormones often cannot equal the surging physiologic need. Adrenal cortical hormone warrants therapeutic support in patients with severe burns or infections as well as in convalescing convalescence, complicated by adrenal insufficiency. For an exogenous "booster" to help meet the demands of such stressful situations.

Upjohn Adrenal Cortex Extract

10 cc. and 30 cc. vials of extract for intravenous, intramuscular, or intracranial injection.

The potency, purity and standardization of this and other products are based on the results of tests to medical practice from the results of tests to medical physiology and in the clinical use of extracts possessing all the vital adrenal cortical hormones.

Each cc. of Upjohn Adrenal Cortex Extract contains biological activity equivalent to 1 mg. of hydrocortisone, as standardized by the National Thyroidal Association test. Alcohol 10%.

a product of

Upjohn

Research

for Medicine... Produced with care... Designed for health

Public Relations

CLOSER TIES BETWEEN VARIOUS PROFESSIONS URGED

"If it is possible for groups like this to get together socially, then it should be possible, also, for us to meet in more concrete ways for the discussion of our related problems; for the exchange of information and experiences; for a better understanding of each other as professional men and citizens, and for the ultimate improvement of the services we represent."

This, briefly, was the keynote of the talk on "Professional Inter-Relationship" given to sixty doctors, dentists and pharmacists of the Upper Peninsula at a dinner-meeting, November 1, in the Dickinson Hotel by Dr. Austin Smith, editor of the *AMA Journal*. Dr. Smith was the principal speaker at a meeting—the first of its kind in the Upper Peninsula—which attracted medical men and pharmacists from Houghton, Iron, Delta, Marquette and Menominee counties, in upper Michigan, and Niagara, Wis.

Dr. Smith recently succeeded Dr. Morris Fishbein as *AMA Journal* editor, and it was the first time since his appointment that he had visited in upper Michigan.

Dr. H. D. McEachran, Iron Mountain, president of the Dickinson-Iron County Medical Society, was chairman of arrangements for the physicians; Dr. A. E. Miller for the dentists and A. G. Buchman, dean of upper Michigan druggists and member of the Michigan state board of pharmacy, for the pharmacists of the peninsula.

Dr. McEachran and Mr. Buchman shared toastmaster duties and introduced the principal guests. Dr. W. H. Huron, Iron Mountain, presented Dr. Smith, *AMA* speaker.

Dr. Smith opened his talk with an account of a recent trip to Europe during which he visited many countries of the continent—Norway, Sweden, Denmark, Switzerland and England, among others. "This experience," he said, "gave me an opportunity to more fully appreciate the kind of life and understanding that we have in the United States, and particularly the interest and inter-relationship between business and professional people and their fellow citizens within the community."

Here the speaker compared the relationship—or lack of it, in some instances—between professional

groups in various countries of Europe with the freedom of thought and expression as exemplified in this country.

"I have found," Dr. Smith continued, "that there is only one country in the world where you can meet as you are here tonight, both as representatives of professional groups in your home communities and as citizens of a free nation. It can be done, in just this way, only in the United States of America."

"I understand, however, that this is the first meeting of its kind to be held in the Upper Peninsula of Michigan. There will be more, however, and out of them will come much that will be mutually valuable. It is a splendid example and a practical illustration of how groups whose interests are interallied can work together for the common good."

"Citizens First"

Dr. Smith emphasized that professional men, generally, as well as all others in a free world, must recognize that they are, first, citizens of a commonwealth.

"Our first responsibility is to our country, even before our professional responsibility. As professional men we are merely practicing some specific aspect of the life of a citizen, and our professionalism must be secondary to our citizenship."

Returning to an account of his trip to Europe, Dr. Smith pointed out the difficulties which confront professional men in various countries of the world today, particularly as to the availability of drugs and other supplies and equipment with which to effectively carry on their work. In Germany, particularly, he said, physicians, dentists and pharmacists are having a difficult time.

"In some instances," the speaker said, "they can eke out only the barest existence, and, of course, they can perform only a minimum of professional service to the community."

Dr. Smith also portrayed the reaction of the people in various sections of Europe.

"It is not altogether a happy picture," he said. "In some respects, in fact, there is cause for genuine worry about the attitude toward the United States and toward us as Americans."

Depressing Picture

"In western Germany, particularly," the speaker said, "the picture is depressing. It will take some time to wipe out the ideology which has been deeply ingrained

(Continued on Page 1330)



Good Wishes
and Good
Health for
1952

Here are our resolutions for 1952. Nothing elaborate, perhaps; not even anything new. But . . . We will continue to work in close cooperation with our many friends in the medical profession. We will continue to supply nature's most nearly perfect food, priced as economically as possible. And we will continue to have a healthful dairy product to meet most specific dietary needs. May the coming year bring the best of everything to you and your patients.

Borden's

Michigan Milk Division
Detroit, Michigan

Poliomyelitis Respirator Center

University Hospital, University of Michigan

With the establishment of a new Poliomyelitis Respirator Center at the University Hospital under sponsorship of the National Foundation for Infantile Paralysis, questions related to its admission policies have arisen.

In order to clarify the specialized service this unit will provide in this area and the type of patients that will be accepted as candidates for transfer to the Center, the following information is submitted.

Purpose and Functions of the Center

The program will be directed toward three major objectives.

Patient Evaluation and Trial Treatment.—This phase of the program involves a co-ordinated effort to gradually separate the patient from the respiratory aids while assuring maximum functional return and efficient use of remaining muscle groups through intensive physiotherapy and functional re-education. The final goal will be a pre-arranged and continuing program of care and rehabilitation in the patient's home environment.

Education.—Hospital physicians, nurses, and medical students will be trained in problems associated with such patients. Special courses to other interested physicians, nurses, and technical personnel will also be offered.

Clinical Investigation.—The third purpose of the Center is to assist in overcoming current deficiencies in our knowledge concerning the abnormal physiology of severely paralyzed poliomyelitis patients requiring a respirator. Clinical evaluation of new respirator equipment will also be carried on.

General Considerations for Admission

For the present, the Center must be limited in size to a capacity of eight beds. Admission will necessarily be highly selective due to the inflexibility of present facilities, unavailability of trained personnel, and the specialized purposes of the Center. Close screening of admissions is further necessary to avoid diverting the efforts of the Center wholly toward custodial care.

1. Due to the necessity for the careful selection of patients at this specialized Center, *it is asked that patients be transferred to it only with prior approval of the Respirator Center staff.*

2. Selection will be based on medical need. Final acceptance of patients will rest with a committee of physicians responsible for the operation of the Center.

This selection and acceptance will include a careful review of the patient's clinical situation. When indicated, the Center will provide a staff physician to discuss the problem with the responsible physician and visit the prospective patient for the purpose of examination.

3. Preference will be given to patients most likely to profit by the Center's rehabilitative functions:

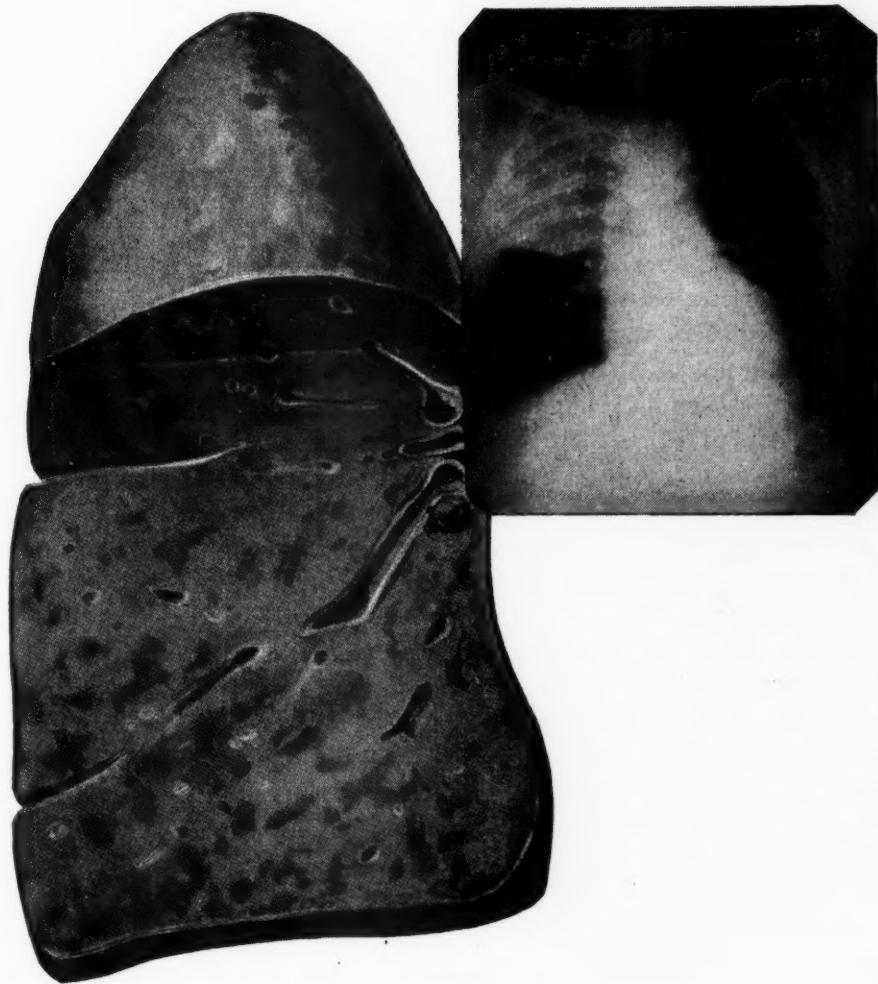
- (a) Patients who can be weaned eventually from the respirator and returned to home environment.
- (b) Patients able to profit from the physical medicine and functional training program. (This, of course, does not mean that severely paralyzed patients would not be acceptable. For example, selection of a patient with trainable muscle groups in one arm would be preferred over a patient without residual muscle function although each candidate may be severely paralyzed.)
- (c) Patients with most recent onset of paralysis will be preferred over those with long standing paralysis since a better opportunity for training and weaning from the respirator exists. However, patients with long standing paralysis will not be eliminated from consideration.

Applications

Each application will receive careful consideration when submitted. If a bed is not immediately available, the application will be held. As a bed becomes available, all applications will be reconsidered on an equal basis. Priority will be based on medical need of the current applicant patients and not on the order in which the applications have been filed.

The National Foundation for Infantile Paralysis, Inc., and the University Hospital hope that the resources of the Respirator Center can be extended to as many patients as possible in this area. Physicians responsible for care of poliomyelitis patients are welcome to initiate application *by letter* to:

David G. Dickinson, M.D., Director
Poliomyelitis Respirator Center
University Hospital
Ann Arbor, Michigan



in lobar pneumonia:

The prompt response to Terramycin therapy in lobar pneumonia is consistent with results obtained in primary atypical pneumonia, bronchopneumonia and many other infections of the respiratory tract. In a typical series of pediatric cases, Terramycin-treated, "temperatures returned to normal in 24 to 48 hours after therapy was begun. The clinical appearance of marked improvement took place during the same period."

*Potterfield, T. G., and Starkweather, G. A.:
J. Philadelphia General Hosp. 2:6 (Jan.) 1951*

CRYSTALLINE TERRAMYCIN HYDROCHLORIDE

available

Capsules, Elixir, Oral Drops, Intravenous,
Ophthalmic Ointment, Ophthalmic Solution.

ANTIBIOTIC DIVISION



CHAS. PFIZER & CO., INC., Brooklyn 6, N. Y.

Quo Vadimus?

By Paul R. Hawley, M.D.
Director, American College of Surgeons
Chicago, Illinois

IT SEEMS to me that the difficulties in which the medical profession now finds itself are due, in large part, to the failure of doctors to realize that a social revolution has been in progress in this country for three decades, and that it has undergone considerable acceleration in the past seventeen years. The profession, as a whole, has been inclined to regard compulsory health insurance as a new and discrete issue, whereas it is only a small part and, if I may be pardoned for saying it, not the most important part of a growing movement to socialize this country.

Because of the nature of my own professional career, these changes are particularly evident to me. Before World War I, I entered the Regular Army. In so far as any contact with social or political trends is concerned, I might as well have entered the most secluded monastic order. For 30 years I was withdrawn from the world of practical affairs.

I left a society in which industry and thrift were cardinal virtues, in which most citizens undertook to provide security for their families through honest and conscientious endeavor; a society which annually attracted hundreds of thousands of underprivileged people from other lands because it offered freedom and opportunity, and not because it promised a place on relief rolls the day of arrival; a society in which men abhorred charity whether charity came from private or public sources; a society in which men demanded as their right only enjoyment of the products of their own labor. The theory that the world owes every man a living, the theory that government will provide whatever the individual is disinclined to provide for himself had not yet been advanced—much less accepted.

I left a society in which workmen took a justifiable pride in their handiwork; a society in which anyone claiming to be a bricklayer would have been ashamed to lay less than 1,200 bricks in a working day—and in which the elite of the trade

boasted of their ability to lay 1,500. It was years later that organizations of labor limited the production of these workmen to 400 bricks per day, thereby transforming expert craftsmen into indifferent jobholders.

I left a society in which the only "Freedoms" men demanded were freedoms *to*—not freedoms *from* something or other—not "freedom from want" but freedom to provide against want by retaining the rewards of their industry instead of turning over the lion's share to an extravagant and incompetent government.

So have we changed for the worse in this country; and it is apparent that, unless these trends be checked and checked soon, they will destroy the last land of opportunity left in this sick world. Those who have lived through this revolution day by day cannot comprehend the magnitude of the changes that have already occurred. To realize them fully, one must have been removed from daily contact with this subtle and insidious weakening of our national fiber. Be not deceived, however. Many medical men seem to think that present trends can be reversed, and that we may return to the status quo ante. I am afraid this is wishful thinking. It is contrary to all experience with social revolutions. The best we can hope for is to halt this mad rush toward the Welfare State; we can never back-track. The time has come for us to catch up and adjust to the situation as it now exists.

Along the lines of socialism, to quote Cecil Palmer as it pertains to England:

"Early this year, a nationalized furniture mover, whose name under private enterprise was a household word, quoted \$91 for moving a canteen refrigerator only 90 miles. A private enterprise quoted \$11.20, but was not allowed to do the job because the socialist government would not permit him to carry goods a greater distance than 25 miles."

We think that's pertinent, because our present tax structure is nearing socialistic-confiscation measures. Nicholas E. Petersen, a Vice President of the First National Bank of Boston, says:

"If all personal taxable income of \$25,000 a year and over were confiscated by the Government, the amount would be sufficient to pay the current running expenses of the Federal Government for only about ten days."—*Selected*.

Fellowship Address, American College of Surgeons, October 19, 1950



*Keep him active
... longer
with plenty of citrus fruit*

As at the other end of the age gamut, optimal nutrition can make a tremendous difference in the vigor and stamina of the oldster.^{1,6,8-11} Many geriatricians stress the importance of vitamin C in the management of geriatric diets,^{2,5,9} and recommend a fully adequate intake^{5,9} of citrus fruits and juices (so often neglected by older people)—because of their high content of this essential vitamin and of other nutrients. Fortunately most everyone likes the taste of Florida citrus fruits and juices. They may be served in a variety of ways, and—under modern techniques of processing and storage, whether fresh, canned or frozen—they can *retain their ascorbic acid content*,^{3,7} and their pleasing flavor,⁴ in very high degree and over long periods.

FLORIDA CITRUS COMMISSION • LAKELAND, FLORIDA

Citrus fruits—among the richest known sources of Vitamin C—also contain vitamins A and B, readily assimilable natural fruit sugars, and other factors, such as iron, calcium, citrates and citric acid.

References:

1. Chidekel, M.: M. Rec., 138:736, 1945. 2. Gordon, E. S.: Nutrition and Vitamin Therapy in General Practice, Year Book Publishers, Chicago, 1947.
3. Krehl, W. A. and Cowgill, O. R.: Food Research, 15:179, 1950. 4. Moore, E. L. et al.: J. Home Econ., 37:290, 1945.
5. Rafsky, H. A. and Newman, B.: Am. J. M. Sc., 201:749, 1941.
6. Rafsky, H. A. and Newman, B.: Geriatrics, 2:101, 1947. 7. Roy, W. R. and Russell, H. E.: Food Industries, 20:1784, 1948.
8. Sadow, S. E.: M. Woman's J., 50:98, 1943. 9. Stephenson, W. et al.: Brit. M. J., 2:839, 1941.
10. Stieglitz, E. J.: J. A. M. A., 142:1070, 1950. 11. Thewlis, M. W.: The Care of the Aged, 5th ed., Mosby, 1946.



FLORIDA

Oranges • Grapefruit • Tangerines

Cancer Comment

THIRD MICHIGAN CANCER CONFERENCE

Cancer does not necessarily run in families, Madge Thurlow Macklin, M.D., of Columbus, Ohio, reported in a paper at the Third Michigan Cancer Conference held at the Kellogg Center for Continuing Education on the campus of Michigan State College, East Lansing, October 12.

Dr. Macklin, Lecturer on Genetics, Medical Department, Ohio State University, was one of six speakers at the meeting which was sponsored by the Cancer Control Committee, Michigan State Medical Society and cosponsored by the Michigan and Southeastern Michigan Divisions, American Cancer Society and the Michigan Department of Health. More than 200 persons representing medical, dental, health, welfare, labor and civic groups from all over Michigan attended the Conference.

"A better understanding of what is involved in heredity as a major force in cancer development would calm the fears of many who now worry needlessly about the dangers of having cancer because some member of the family has had it," Dr. Macklin said.

She pointed out that environmental factors play an important part in cancer development, but for cancer to develop there must also be some hereditary background.

"When either the hereditary or environmental factor is weak, cancer is less likely to develop than when either or both are strongly present. Persons with a history of known cancer in the family should be more alert to symptoms suggestive of the disease and, by frequent medical examinations, be assured that an unknown cancer is not growing in their bodies," Dr. Macklin added.

Miss Hulda Edman, R.N., Cancer Nursing Specialist, Detroit Visiting Nurse Association, discussed nursing problems in home care of cancer patients. She emphasized that every cancer patient presents different nursing problems, depending on the sex, age, social and economic status of the patient.

"The nurse is a member of a working team consisting of the patient, his family, the physician, and public and private agencies that may be involved in his treatment and care," said Miss Edman.

In the home, personalized care, including adequate nutrition, understanding the patient's mental reactions and those of his family toward his illness can be more adequately understood and a better service rendered.

"The psychiatrist's contribution to the home care of cancer patients rests on his appreciation of the mental problems involved rather than on the physical care and treatment of the patient," Harrison Sadler, M.D., of the Department of Psychiatry, Wayne University Medical School, Detroit, said.

Dr. Sadler pointed out that the greater the emotional reaction of the patient and his family toward his illness, the more need for the psychiatrist to lessen the tension of these reactions and help all concerned to take a more tolerant and understanding attitude toward the situation.

"When lay cancer education in Michigan was first begun, in many rural areas the people often were unacquainted with the problem and resources for help in solving it," stated Mrs. Marjorie Karker, Director, Women's Activities, Michigan Farm Bureau.

Mrs. Karker stressed the fundamental facts that everyone should know about cancer and its control and reported that during the past few years all local committees of the women of the Farm Bureau had been alerted to the cancer problem and the part its members can and must take for their personal protection against the disease.

"Thanks to the widespread educational efforts, the farm women of Michigan are now better informed than ever before about the dangers of cancer and their part, in co-operation with other local agencies, in bringing about a better control of cancer in their local areas," said Mrs. Karker.

Commenting on cancer education in schools, F. L. Rector, M.D., Secretary, Cancer Control Committee, Michigan State Medical Society, said:

"Cancer education in schools is not only practicable but highly desirable."

High school students accept such teaching in an impersonal manner and often are able to influ-

(Continued on Page 1330)

Holiday Greetings

We take this opportunity
to wish you a very Merry
Christmas and a Happy,
Prosperous New Year . . .

. . . to thank you for
the patronage with which
you have favored us . . .

. . . and to assure you
of our continued
co-operation during
the year to come.

ALEX MCKINNON
WALLACE "ANDY" ANDERSON
MICHAEL CAUGHLIN
FERDINAND CINELLI
ANTONIO "TONY" FERRARA
ERIC GOULLAUD
SAM GRAND
KENNETH JOHNSON
ANTHONY "TONY" KIRPLUK
MYRON RIPP
JULIUS SAWALL
GEORGE SULKY
CROSBY WASHBURNE

of The F. J. Hartz Company

CANCER COMMENT

CANCER COMMENT

(Continued from Page 1328)

ence their parents to seek medical attention for neglected minor illnesses that often prove to be cancer in early and curable stages.

"If all high school graduates understood the part they must play in their own protection against this disease, in a few years the death rate from cancer would show a marked decline," Dr. Rector reported.

He stated that the Cancer Control Committee had in preparation a cancer teaching manual for high school use that would be offered to the schools of Michigan as a source book of information on that subject.

In welcoming the members of the Conference, A. E. Heustis, M.D., Commissioner of Health of Michigan, said:

"The potential value of a meeting of this kind in which the doctor of medicine, the public health worker and the lay worker with an intelligent and informed interest in cancer control are all working together toward a common goal, holds great promise for an effective attack on the disease. Through such co-operation and the application of present knowledge, the death rate from cancer can be lowered in a comparatively short time."

In answer to a question from the audience, Dr. Heustis explained that cancer is legally a reportable disease in Michigan and read those portions of the public health and other laws relating to the subject. He also explained in detail the steps through which the matter passed in order to be made official.

The interest displayed in this Conference, as in the two preceding ones, has determined the Cancer Control Committee to continue these educational programs. The Fourth Michigan Cancer Conference in 1952 already is being planned.

When hoarseness persists for more than two weeks, the larynx should be examined with a throat mirror.

* * *

Earache on the same side as the lesion may accompany advanced cancer of the intrinsic larynx.

* * *

Pain on swallowing is the most common primary symptom of cancer of the extrinsic larynx.

* * *

For the general practitioner, laryngeal cancer is a problem of diagnosis and of help in getting proper therapy.

* * *

In no other internal organ does cancer present definitive symptoms as early as in the larynx.

* * *

The cure rate for laryngeal cancer is nearly 90 per cent when the disease is confined to the vocal cord.

CLOSER TIES BETWEEN VARIOUS PROFESSIONS

(Continued from Page 1322)

in the people during the past two generations. It is especially apparent in the young people of Germany today, who seem to reflect an attitude of outright suspicion about all foreign influence, no matter what it may be."

The same situation, to some extent, applies to France, Dr. Smith added.

Again the AMA editor emphasized the value of professional inter-relationship as a safeguard against the kind of ideology which destroys individual thought, freedom and action, and urged that greater effort be made among professional groups to meet and discuss their related problems. He suggested that each of the three groups represented—doctors, dentists and pharmacists—appoint steering committees to draft recommendations for future consideration, thus encouraging further inter-relationship. —*The Iron Mountain News*, November 2, 1951.

THE SANBORN



CARDIETTE

DIRECT WRITER

TODAY'S FOREMOST ELECTROCARDIOGRAPH

The Viso-Cardiette provides standard accurate records in true rectangular coordinates of all accepted leads. Records are permanent, produced by heated stylus on plastic coated paper. Operation is simplified; only two major controls for routine work. The Viso is famous for trouble-free performance. It was the first eeg accepted by the A. M. A. Council on Physical Medicine and Rehabilitation.

SALES AND SERVICE **SANBORN COMPANY** Branch Office
1408 David Broderick Tower, Detroit 26, Mich.
Phone Woodward 3-1283

**"In general, symptomatic improvement
[of menopausal symptoms] was striking within
7 to 14 days after treatment..." with
"Premarin."**

Gray, L.: J. Clin. Endocrinol. 3:92 (Feb.) 1943.

Many clinicians have found that "Premarin" therapy usually brings about prompt relief of distressing menopausal symptoms. Furthermore, symptomatic improvement is followed by a gratifying sense of well-being in a majority of cases. This is the "plus" in "Premarin" therapy which tends to quickly restore the patient's normal mental outlook.

Four potencies of "Premarin" permit flexibility of dosage: 2.5 mg., 1.25 mg., 0.625 mg., and 0.3 mg. tablets; also in liquid form, 0.625 mg. in each 4 cc. (1 teaspoonful).

"Premarin" contains estrone sulfate plus the sulfates of equilin, equilenin, β -estradiol, and β -dihydroequilenin. Other α - and β -estrogenic "diols" are also present in varying amounts as water-soluble conjugates.



"PREMARIN"®



*Estrogenic Substances (water-soluble) also known as
Conjugated Estrogens (equine)*

**Ayerst, McKenna & Harrison Limited
22 East 40th Street, New York 16, N. Y.**

Annual Session Echoes

GRAND RAPIDS ATTENDANCE RECORD BROKEN

A new high for Grand Rapids was established at the 1951 MSMS Annual Session, September 26-27-28. A total of 2901 persons was marked up at the 86th Annual Session of the Michigan State Medical Society!

The breakdown of this high registration is as follows:

Doctors of Medicine	1,480
Guests	397
Exhibitors	503
Woman's Auxiliary members	284
Medical Assistants members	237

GRAND TOTAL.....2,901

MSMS "FIFTY YEAR CLUB" NOW TOTALS 169

The "Fifty Year Club" of the Michigan State Medical Society gained thirty-two members in 1951 to swell its total enrollment to 169. Founded five years ago for the purpose of paying tribute to those doctors of medicine who have practiced medicine for a half century or longer, the induction into office has become a standard feature of the Officers' Night ceremonies at MSMS Annual Sessions.

Inducted this year were: William F. Acker, M.D., Monroe; D. H. Burley, M.D., Almont; Wm. H. Brock, M.D., Saginaw; J. W. Barnebee, M.D., Kalamazoo; G. A. Conrad, M.D., Sault Ste. Marie; G. C. Conkle, M.D., Boyne City; Julius C. Clippert, M.D., Grosse Ile; J. E. Curlett, M.D., Roseville; J. W. Gethings, M.D., Battle Creek; C. S. Gorsline, M.D., Battle Creek; Augustus Holm, M.D., LeRoy; James Houston, M.D., Swartz Creek; G. B. Hoops, M.D., Detroit; Wm. T. King, M.D., Ahmeek; Simon Levine, M.D., Houghton; Horace H. Loveland, M.D., Tecumseh; George W. Logan, M.D., Flushing; Frank E. Luton, M.D., St. Johns; G. W. Moore, M.D., Bay City; A. E. MacGregor, M.D., Battle Creek; Esli T. Morden, M.D., Adrian; A. Noordewier, M.D., Grand Rapids; F. W. Ostrander, M.D., Freeland; W. T. Parker, M.D., Owosso; B. Morgan Parker, M.D., Utica; J. W. Rigterink, M.D., Grand Rapids; E. D. Sage, M.D., Kalamazoo;

L. N. Upjohn, M.D., Kalamazoo; H. R. Wilson, M.D., Saginaw; W. H. Winchester, M.D., Flint; Herbert H. Wiley, M.D., Algonac; J. C. Grosjean, M.D., Bay City.

THANKS TO CONVENTION WORKERS

The Council of the Michigan State Medical Society, at its September 28, 1951 meeting in Grand Rapids, placed on its minutes a vote of thanks to all who helped to make the 86th Annual Session in Grand Rapids such an outstanding success. Deserving special commendation are: J. Duane Miller, M.D., Grand Rapids, General Chairman of Arrangements; W. B. Mitchell, M.D., and H. J. Van Belois, M.D., Grand Rapids, Co-Chairmen of Committee on Scientific Exhibit; C. A. Payne, M.D., Chairman, F. C. Brace, M.D., H. G. Benjamin, M.D., and P. W. Kniskern, M.D., all of Grand Rapids, Scientific Press Relations Committee; J. E. Livesay, M.D., Flint, Chairman, R. H. Baker, M.D., Pontiac, H. F. Dibble, M.D., Detroit, William Bromme, M.D., Detroit, and L. Fernald Foster, M.D., Bay City, House of Delegates Press Relations Committee.

Ubiquitous Hosts: G. T. Aitken, M.D., G. D. Albers, M.D., F. S. Alfenito, M.D., J. H. Beaton, M.D., C. B. Beeman, M.D., C. M. Bell, M.D., Donald Boersma, M.D., J. R. Brink, M.D., L. C. Carpenter, M.D., I. G. DePree, M.D., Leon DeVel, M.D., E. F. Ducey, M.D., M. E. Ellis, M.D., G. T. R. Fahlund, M.D., W. J. Fuller, M.D., A. M. Hill, M.D., W. A. Hyland, M.D., W. T. Kruse, M.D., R. G. Laird, M.D., A. E. Lamberts, M.D., R. H. Meade, Jr., M.D., J. C. Montgomery, M.D., V. A. Notier, M.D., L. P. Ralph, M.D., J. A. Ryan, M.D., D. M. Schuitema, M.D., F. D. Thompson, M.D., P. W. Willits, M.D., all of Grand Rapids.

Chairmen and Secretaries of Assemblies: William Bromme, M.D., Detroit, J. R. Delaney, M.D., Detroit, R. J. Hubbell, M.D., Kalamazoo, F. P. Husted, M.D., Bay City, W. S. Jones, M.D., Menominee, G. B. Saltonstall, M.D., Charlevoix, G. W. Slagle, M.D., Battle Creek, E. M. Smith, M.D., Grand Rapids, W. A. Stryker, M.D., Wyandotte, D. I. Sugar, M.D., Detroit, J. E. Webster, M.D., Detroit, and D. B. Wiley, M.D., Utica.

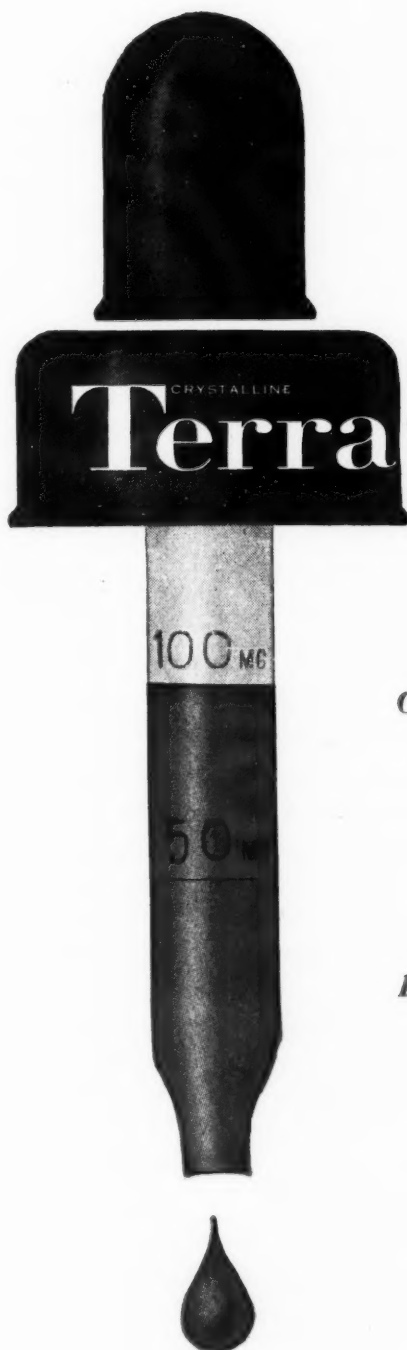
(Continued on Page 1334)

THE ONLY ONE IN ORAL DROPS

RR

*only Terramycin in liquid
concentrate for optimal convenience*

Crystalline Terramycin Hydrochloride Oral Drops provide 50 mg. in each 9 drops—or 200 mg. per cc.—a concentration affording optimal simplicity and convenience in dosage.



CRYSTALLINE
Terramycin
HYDROCHLORIDE

ORAL DROPS

Can be taken "as is" or mixed with foods and fluids

These potent drops for oral administration are completely miscible with most foods, milk and fruit juices, thus permitting a further simplification in the therapeutic regimen.

Pure crystalline antibiotic—well tolerated

Terramycin Oral Drops are prepared from pure crystalline material. As with other dosage forms of this effective broad-spectrum antibiotic, Terramycin Oral Drops are well tolerated.

Supplied: 2.0 Gm. with 10 cc. of diluent, and specially calibrated dropper.

ANTIBIOTIC DIVISION

Pfizer

CHAS. PFIZER & CO., INC., Brooklyn 6, N. Y.

THANKS TO CONVENTION WORKERS

(Continued from Page 1332)

Discussion Conference Leaders: H. B. Barker, M.D., Pontiac, C. B. Beeman, M.D., Grand Rapids, W. C. C. Cole, M.D., Detroit, J. E. Croushore, M.D., Detroit, A. C. Curtis, M.D., Ann Arbor, J. F. Failing, M.D., Grand Rapids, F. B. Fralick, M.D., Ann Arbor, R. L. Haas, M.D., Ann Arbor, L. T. Henderson, M.D., Detroit, L. J. Hirschman, M.D., Traverse City, E. A. Kahn, M.D., Ann Arbor, George Kamperman, M.D., Detroit, E. E. Martmer, M.D., Detroit, F. R. Menagh, M.D., Detroit, J. G. Molner, M.D., Detroit, G. B. Myers, M.D., Detroit, G. C. Penberthy, M.D., Detroit, H. R. Roehm, M.D., Birmingham, E. D. Spalding, M.D., Detroit, F. D. Thompson, M.D., Grand Rapids, and R. W. Waggoner, M.D., Ann Arbor.

House of Friendship Committee: R. H. Baker, M.D., Pontiac, W. D. Barrett, M.D., Detroit, Otto O. Beck, M.D., Birmingham, R. S. Breakey, M.D., Lansing, William Bromme, M.D., Detroit, A. S. Brunk, M.D., Detroit, J. S. DeTar, M.D., Milan, F. H. Drummond, M.D., Kawkawlin, L. Fernald Foster, M.D., Bay City, W. B. Harm, M.D., Detroit, L. C. Harvie, M.D., Saginaw, Wilfrid Haughey, M.D., Battle Creek, R. J. Hubbell, M.D., Kalamazoo, L. W. Hull, M.D., Detroit, W. S. Jones, M.D., Menominee, J. E. Livesay, M.D., Flint, A. H. Miller, M.D., Gladstone, J. D. Miller, M.D., Grand Rapids, C. A. Paukstis, M.D., Ludington, R. C. Pochert, M.D., Owosso, G. B. Saltonstall, M.D., Charlevoix, G. W. Slagle, M.D., Battle Creek, C. E. Umphrey, M.D., Detroit, D. B. Wiley, M.D., Utica, and H. B. Zemmer, M.D., Lapeer.

Richard A. Aubrey, Detroit, loaned by the E. I. du Pont de Nemours & Co., Inc., for the entire period of the Annual Session, rendered untiring service both day and night.

The MSMS public relations activities gained many aides during the convention including those who arranged for TV, radio and service club appearances:

Paul Ralph, M.D., E. W. Schnoor, M.D., Richard Sidell, M.D., William R. Vis, M.D., all of Grand Rapids.

Eugene Wiard and Margalee Magoon, both of Lansing, Michigan Health Council; Arthur Hagman, Detroit, *Inside Michigan*; Robert K. Mason

and Betty Williamson, both of Grand Rapids, Wallace-Lindeman Agency.

Gene Peterson, Radio Station WLAV, Hal Hoffman, WLAV-TV, Robert Runyon, Mrs. Kay Runyon, Glen LePard, and Mrs. Rosemary Grinage, all of Grand Rapids with Radio Station WOOD.

Burdett Ashley, Associated Press, George Zarry, United Press, and W. F. Young, United Press, both of Grand Rapids, Hugh Lago, *Grand Rapids Herald*, Dwight Jarrell, *Grand Rapids Herald*, B. G. Brown, *Grand Rapids Press*, Joan Dunakin, *Grand Rapids Press*, Allen Shoenfield, *Detroit News*, Jack Pickering, *Detroit Times*, Dale Nouse, *Detroit Free Press*.

Thanks for the generous supplies of notebooks distributed to registrants at the 1951 Annual Session are due the Bruce Publishing Company of Saint Paul and the Michigan Medical Service, Detroit.

The Upjohn Company of Kalamazoo were hosts to the Woman's Auxiliary to the Michigan State Medical Society on the occasion of its recent convention. Approximately 100 wives of MSMS members were transported from Grand Rapids to Kalamazoo for an inspection of the Upjohn plant, including the laboratories, and for a social hour followed by dinner with officers of the Upjohn Company.

WHAT THEY THOUGHT OF THE 1951 MSMS ANNUAL SESSION

N. S. Assali, M.D., Cincinnati, Ohio (Guest Essayist): "Mrs. Assali and I would like to present to the Michigan State Medical Society our sincere thanks for the kindness and the overwhelming hospitality which was shown us while we were in Grand Rapids during the meeting of the Society. Needless to say it was such an interesting audience. The three days we spent in Grand Rapids will remain in our memories for a long time. Thank you again for all your kindness."

* * *

S. William Becker, M.D., Chicago, Illinois, (Guest Essayist): "As usual, I greatly enjoyed the honor of being a guest speaker at your meeting and renewing acquaintances with some of my Michigan friends."

* * *

A. I. Dodson, M.D., Richmond, Virginia (Guest Essayist): "I greatly appreciate the kindness shown me while visiting your meeting."

(Continued on Page 1336)

NORM

Normal schedule of development (auxodrome) plotted on Wetzel Grid.¹

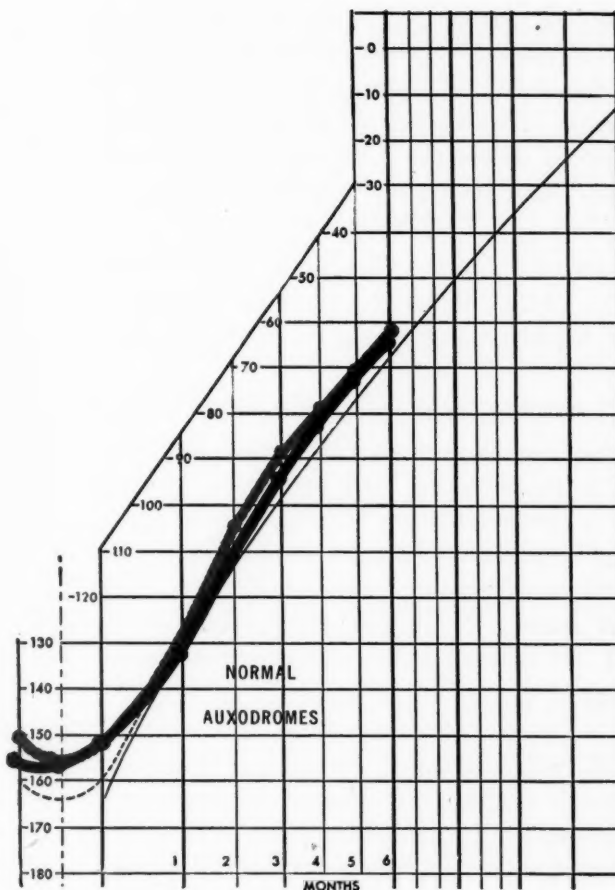
CURVE A

Composite Wetzel Grid auxodrome of 60 unselected infants on S-M-A from birth to 6 months of age.

CURVE B

Growth data, recomputed on Wetzel Grid, based on "selected subjects, most of whom were favored by environment;"² age: from birth to 6 months.

1. Wetzel, N. C.: J. Pediat. 29:439, 1946.
2. Jackson, R. L., and Kelly, H. G.: J. Pediat. 27:215, 1945.



Comparative development rates prove...

S-M-A[®]

builds husky babies

Recent clinical studies of development rates of *unselected* S-M-A-fed babies (curve A on chart) prove its value. The growth results compare favorably with "standards which are considered to approach the optimum for general pediatric practice."² (curve B on chart).

Because it is patterned after human milk

S-M-A[®]

with Vitamin C added
is recognized as an outstanding food for babies.



Wyeth Incorporated, Philadelphia 2, Pa.



WHAT THEY THOUGHT OF THE SESSION

(Continued from Page 1334)

Charles R. Doyle, M.D., St. Louis, Missouri (Guest Essayist): "I really enjoyed the meeting in Grand Rapids and I appreciate the opportunity very much. It was good to renew old acquaintances and of course the opportunity to visit with my family. Best wishes and thanks again."

* * *

A. J. Horesh, M.D., Cleveland, Ohio (Guest Essayist): "Many thanks for the wonderful time I had in Michigan and your generous hospitality."

* * *

Daniel B. Kirby, M.D., New York, N. Y. (Guest Essayist): "Thank you very kindly for the privilege of addressing the Michigan State Medical Society. I appreciate your hospitality very much. It was good to know you and to renew my friendship with my Michigan friends, and particularly with Bill Burns. Please give my kindest regards to all. I will look forward with pleasure to seeing you again."

* * *

Prof. Clarence Manion, South Bend, Indiana (1951 Biddle Lecturer): "Yours is an unmatched hospitality which I shall never forget. It was a great pleasure to meet your group, Dr. Cline and all of your stimulating guests."

* * *

Alexander Marble, M.D., Boston, Mass. (Guest Essayist): "I enjoyed being at the meeting very much indeed. I was certainly well taken care of and your organization deserves compliments on the efficient way in which the meetings are run. I happen to be a member of the Committee on Arrangements of the Massachusetts Medical Society and hope to use some of the ideas that I gained in attendance at your meeting."

* * *

Waldo E. Nelson, M.D., Philadelphia, Pa. (Guest Essayist): "I enjoyed my visit to Grand Rapids and am particularly appreciative of the many things that were done for me, especially by Dr. Morgan Hill and the other pediatricians in Grand Rapids."

* * *

Willis J. Potts, M.D., Chicago, Illinois (Guest Essayist): "It was a pleasure to meet with the Michigan State Medical Society. I very much appreciated the kindness of people in general and

the great hospitality of Dr. Richard Meade, my host."

* * *

Ralph A. Reis, M.D., Chicago, Illinois (Guest Essayist): "Just to tell you how much I enjoyed participating in your recent meeting in Grand Rapids and visiting with so many of my old friends."

* * *

Stephen Rothman, M.D., Chicago, Illinois (Guest Essayist): "I wish to express my heartiest thanks for the wonderful hospitality extended to me during my stay in Grand Rapids. Dr. Kruse indeed did everything possible to make my stay most pleasant. I also wish to thank your Society for everything."

* * *

Elmer L. Sevringhaus, M.D., Nutley, New Jersey (Guest Essayist): "It was a pleasure to have the opportunity of meeting you and my many friends in Grand Rapids. The hospitality on the Grand Rapids end was wonderful."

* * *

Franklin H. Top, M.D., Minneapolis, Minnesota (Guest Essayist): "Thank you for the privilege of speaking at the 1951 session of the Michigan State Medical Society. I enjoyed the assignment and met many of my old friends."

* * *

Henry L. Williams, M.D., Rochester, Minnesota (Guest Essayist): "I enjoyed participating in your program and if the Council feels I contributed satisfactorily, I am gratified."

* * *

A. M. Campbell, M.D., Grand Rapids (MSMS Member): "You have again done a wonderful job in furnishing a fine program for the State Society meeting. I hope you will live for many years to continue your splendid services in Michigan."

* * *

L. J. Hirschman, M.D., Traverse City (Past President, MSMS): "Re the recent meeting at Grand Rapids, I was pleased at the active participation of the members present at our Discussion Conference and at the type of questions presented. Dr. Mackie was most gracious in his replies, and expressed himself to me as highly gratified at the reception of his presentations."

(Continued on Page 1338)

FUNCTIONAL NERVOUS DISORDERS

IN *Visceroptotic Patients*



CAMP

Visceroptosis Supports, scientifically designed, universally distributed. Prescribed by physicians and praised by the patients who wear them.

Pressure variations induced by movements of the diaphragm are in part responsible for the venous return to the heart. Highly sensitive nervous connections are influenced by its positions. "Globus Hystericus" is seldom manifest in functional visceroptotic patients when reclining. Sudden dropping of the viscera such as occurs upon arising in the morning initiates symptoms. Tension on the diaphragm irritates sympathetic connections, thereby lowering vasomotor tone. "The globus is almost invariably relieved by abdominal support and systematic breathing exercises to release diaphragmatic tension."*

*Gosselin, George A., M.D.
Neurology and Physiology in
Functional States
Connecticut State Medical Journal
15: 109-113, (February) 1951

S. H. CAMP and COMPANY, JACKSON, MICHIGAN

World's Largest Manufacturers of Scientific Supports

Offices in New York • Chicago • Windsor, Ontario • London, England

DECEMBER, 1951

Say you saw it in the Journal of the Michigan State Medical Society

1337

ANNUAL SESSION ECHOES

(Continued from Page 1336)

R. J. Mason, M.D., Birmingham (Chairman of the MSMS Child Welfare Committee): "Congratulations to you and your staff for the preparation and conduction of another very fine medical convention. I am sure none of us who attended the three day session fully appreciate all the time and effort that you spend in getting this program for us, but at any rate you can have the satisfaction of accomplishing a worthwhile project in a most satisfactory style."

* * *

A. M. Schwittay, M.D., Madison, Wisconsin, (Guest): "The program is quite the best I have ever seen at an annual meeting. That is why I went to Grand Rapids. Thank you very much for taking care of me at your annual meeting. It was kind of you to get me a room at the Pantlind. I enjoyed the exhibitors' dinner no end. Never have I seen quite such hospitality."

* * *

Michigan Tuberculosis Association, Lansing (Scientific Exhibitor): "The Michigan Tuberculosis Association appreciates very much the recent opportunity afforded to them to exhibit at your Eighty-Sixth Annual Session. The interest expressed by the doctors in the tuberculosis problem, as evidenced by their attendance at our exhibit, was most gratifying. May we also commend your Society on the excellence of your 1951 session and exhibition."

* * *

Joseph W. Mann, Detroit (Veterans of Foreign Wars, Guest): "I really enjoyed myself at the Michigan State Medical Society session in Grand Rapids, Michigan. I sincerely appreciate the courtesy and consideration shown me in Grand Rapids and I am certain that our efforts will be of mutual value."

* * *

Russell F. Staudacher, Chicago (Executive Secretary, Student American Medical Association): "I wish to express my real thanks for the swell time I had at the Michigan State meeting. It was fine meeting my old friends and to learn of the State Society's activities in connection with both the Student American Medical Association and the American Medical Education Foundation."

* * *

Olive V. Seibert, St. Paul, Minnesota (Bruce Publishing Company): "Thank you for the many

courtesies shown me while attending the 86th Annual Session in Grand Rapids. I shall always feel that I am a member of the Michigan family, for you good folks have done everything to engender that feeling."

* * *

H. L. Heller (A. S. Aloe Company, St. Louis, Missouri): "From comments of Tom Boufford and Dick Bibbero who made the meeting, this year's Michigan State Medical Society's Convention seems to have been the best ever. I know that this tremendous response is a tribute to the planning and work that you did together with your staff in setting up the meeting. I, therefore, felt called upon to drop you this note of appreciation for the splendid job you do. We really appreciate it and look forward to these meetings."

* * *

Mrs. Hermien Nusbaum (Baby Development Clinic, Chicago, Illinois): "We are planning to be with you in 1952. We feel our experience in Grand Rapids was very worthwhile."

* * *

Jean O'Brien (Beech-Nut Packing Company, New York): "Since this was the first year that Beech-Nut has been able to attend the Michigan State Medical Society meeting, we wish to express our thanks to you for your fine help. So far as we have seen, this was one of the best medical meetings we have attended. We sincerely hope we shall be able to join you again in future meetings."

* * *

J. G. Crume (Brown & Williamson Tobacco Corporation, Louisville, Kentucky): "We wish to express appreciation for the many courtesies we received from you and your staff during your recent meeting—the first one in which we participated. This certainly was a most successful show from our point of view and we want to add our congratulations to the many others we know you already have received."

* * *

M. M. Ricketts (C.S.C. Pharmaceuticals, New York): "It was a great pleasure to me to be able to pass another milestone with the MSMS."

* * *

James T. Beers (Coca-Cola Company, Atlanta, Georgia): "Our sincere congratulations to you for another wonderful Michigan State Medical con-

(Continued on Page 1340)



Pelton Futuristic Sterilizer

WITH THE
Exclusive
Storador

A Lasting
Investment
in Modern
Asepsis

Today's most modern cabinet sterilizer is designed to serve you efficiently for years to come. Its long-life 16" instrument sterilizer is available with either timer or automatic control. The Storador features four covered plastic trays. Cabinet in any standard color at no extra cost. See it at your dealer's or write for literature.

PELTON

THE PELTON & CRANE CO., DETROIT 2, MICHIGAN

(Continued from Page 1338)

vention. It was nice seeing you again and I wish for you the best of everything.

* * *

Dr. J. W. Waldman (Doak Co., Inc., Cleveland, Ohio): "I want to compliment you on the way you conduct the Michigan State Medical meeting."

* * *

Wm. F. Funkhouser (C. B. Kendall Company, Indianapolis, Indiana): "The 1951 Michigan Medical meeting was outstanding for us in physician registration and interest. We express our thanks and appreciation to the doctors of Michigan and all others responsible for conducting this successful convention. We hope to be back again in 1952. I wish to personally thank you and your staff for the many favors and kind attention shown us during this meeting."

* * *

Marion Phillips (Marion Phillips Maternity Preparations, Rochester, New York): "I do think to have had a registration of 350 at the MSMS meeting was pretty good for us—new in the exhibition field."

* * *

R. V. Oosting (Medical Arts Surgical Supply Company, Grand Rapids, Michigan): "I wish to express my sincere thanks for a very successful meeting last week, made possible by your perfect management."

* * *

Henry C. Black (Professional Management, Battle Creek, Michigan): "These many conventions which now do many things as routine, which you pioneered in years past, must give you a bit of satisfaction. You are tops in our book in many ways."

* * *

George C. Straayer (Schering Corporation, Bloomfield, New Jersey): "I enjoyed very much attending the Michigan State convention and it was grand to have the opportunity for renewing acquaintances with you and many other friends in the State of Michigan."

"Michigan medicine is healthy. That's a fact of vital importance to you. Translated in simple terms it means that you have the chance for a longer, healthier life." —From "Return of the Family Doctor," *Inside Michigan*, October, 1951, Number.

MSMS FILMS AVAILABLE TO COMMUNITY GROUPS

Two Michigan State Medical Society motion pictures, "Lucky Junior" and "To Your Health," are now available to service clubs and community groups after a successful circuit of theaters and television stations where they were seen by 5,294,037 persons in the nation.

"To Your Health," a film designed to combat the wild schemes of socialized medicine, has been shown in 261 Michigan theaters. Another 295 theaters have screened "Lucky Junior," a film on immunization. By actual count of paid admissions in these theaters, both pictures have been seen by Michigan audiences totaling 694,078 persons.

Release to the television stations in Michigan has made it possible for a greater audience to see the film; this group is conservatively estimated at 1,650,000.

Five states have purchased the rights to show "To Your Health" in the theaters of their states. In Florida, North Carolina, Oklahoma, South Carolina and Rhode Island, approximately 1,350,000 persons have seen this picture.

In addition, New York and Maryland have shown the picture to private groups and on television to an estimated audience of 1,500,000 persons.

When "Lucky Junior" and "To Your Health" play before community audiences it is expected that an additional 50,000 persons in Michigan will see these films. This figure may then be added to the 5,294,037 individuals who have already watched the films in either their hometown theaters or on the screens of their television sets. The listing of the films in national catalogues will increase their distribution still further.

The total income from the sale of the rights to the pictures has been \$1,972.50. The total cost for production and distribution of "To Your Health" is one and one-third cents per person per Michigan viewer. This is probably the most economical media used for a 13-minute message designed for mass dissemination of educational information on a controversial issue.

"To Save Your Life" is Low-Budget Picture

The latest Michigan State Medical Society film, "To Save Your Life," was made on an even lower budget. This film is a 16 mm. sound, color motion picture tracing the development of a doctor of medicine from high school through the years of his practice. The 30-minute film will be valuable to every high school, college, PTA and service club in the United States.

Because of the wholehearted co-operation of the doctors of medicine, the medical teaching institutions and others who participated in the film, it is expected that the cost per person viewing this motion picture in Michigan will be less than one-third of one cent per person.

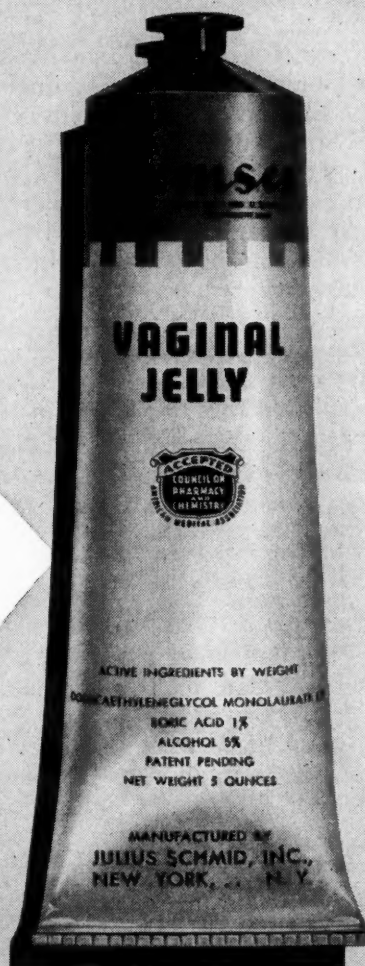
1952 DUES

AMA—MSMS—COUNTY

Membership dues payable to County Secretary

You may prescribe "RAMSES"† Vaginal Jelly with full confidence in its safety and effectiveness. No vaginal jelly available provides a greater degree of spermicidal or barrier action than does "RAMSES" Vaginal Jelly.

**IMMOBILIZES
SPERM IN THE
FASTEST TIME
RECOGNIZED
FOR CHEMICAL
CONTRACEPTIVES**



* This immobilization time is measured by the Brown and Gamble technique, the only method accepted by the Advisory Committee on Contraceptives of the Council on Pharmacy and Chemistry of the American Medical Association for determining the sperm immobilization time of chemical contraceptives.

gynecological division

Julius Schmid, Inc.

423 West 55th Street, New York 19, N. Y.

quality first since 1883



†The word "RAMSES" is a registered trademark of Julius Schmid, Inc.

Editorial Comment

WHAT PRICE STRESS?

Even on a quiet day, between routine work and driving a car, everyone makes as many contacts with other people as our grandparents made in a month. The drag on the nervous system, the daily striving for equanimity demands a manifold myriad of conscious and reflex reactions. Walking a block on a busy street requires as many directional decisions as would carry one a fortnight a generation ago. This applies to everybody, every worker. And the correlated mishaps, and crack-ups, and accidents, and mental and physical blow-ups are in geometrical multiplicity as compared to the era nostalgically called the gay 90's. All this is the workday frame of reference in which each must carry on his work.

A professional friend had a heart attack at the height of his productive years, and at an age which should have been the mid-period rather than what is, all too sadly obvious, the end of an active career.

Whether because of greater familiarity or of significant statistical importance, it remains that too many of our best men are cut down in mid-career at the height of their value to family and society by cardio-vascular accidents—heart disease and apoplexy. It might be better if more people recognized their fatigue threshold rather than try to raise the coefficient of achievement.

Though frustration, disharmony, inhibited emotion, and fear—fear mostly of oneself—are commonplace, frequent common denominators of cardiovascular disease that cross all the recognized demonstrable organic causes, another major cause is working over and past the normal fatigue point. What has to be recognized is that it is the unusual individual who can do the unusual amount of work. And recall that those giants of medicine who lived and worked into the seventh and eighth decades had no room in a happy life for malice.

A doctor friend, honorable and conscientious over and above any reasonable standards, with a surgical training built his surgical practice out of his own general practice. During the late hectic years he carried on both a huge general practice and his surgical practice. An idealist, his home life was idyllic. But without premonitory symptoms he died suddenly from a coronary occlusion on a very hot midsummer day at the time he was busiest.

There is value in learning to rest, to play, relax; to sit home and watch the kids in the evening. For most of us mortals it is not intended that every waking moment should be a working moment. To each it is important for the long term pull that the coefficient of effort be graphed not too long, too far beyond the zone of fatigue. The economic law

of diminishing returns concerns the biological limit of human endeavor. Harmony, emotional calm, and the ability to look the guy in the eye who leers back from the mirror when one shaves smooths out the peaks of high blood pressure.

It takes years to evaluate things and people, to learn what is momentous. Maturity brings knowledge that most things that pour out adrenalin are really unimportant.

And it is very urgent when one is younger to strive to play it square, so that when years pile up it becomes reflex to do the right thing automatically without having to ponder.

No reward is worth hurting the other fellow.
—DAVE SUGAR in *Detroit Medical News*,
October 29, 1951.

MEDICAL INCOMES

Are all doctors rich, prospering on big fees and little work?

The Office of Business Economics of the Department of Commerce says "no." This independent, neutral agency, working in conjunction with the American Medical Association's Bureau of Medical Economic Research, has just completed a survey of 55,000 medical incomes, according to THE JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY. It was found that the average net income, before taxes, of the physician is \$11,058 annually. Naturally, some physicians make a great deal more than others, but that is the average and it is interesting to note that while the national income of the American people was up 224 per cent in 1949 over the 1935-39 period, the incomes of the physicians increased 150 to 170 per cent. This represents gross income, not "take home pay."

Considering the long and expensive training necessary to the young man entering the medical profession, the years required to establish a practice and the great responsibilities involved, it cannot be argued that the average income for the profession as a whole is high.—*Benton Harbor News-Palladium*, October 8, 1951.

TOO BUSY TO CELEBRATE

A physician bends over a man apparently dead of a heart attack and administers a quick hypodermic of adrenalin. A life has been saved by the heart stimulant.

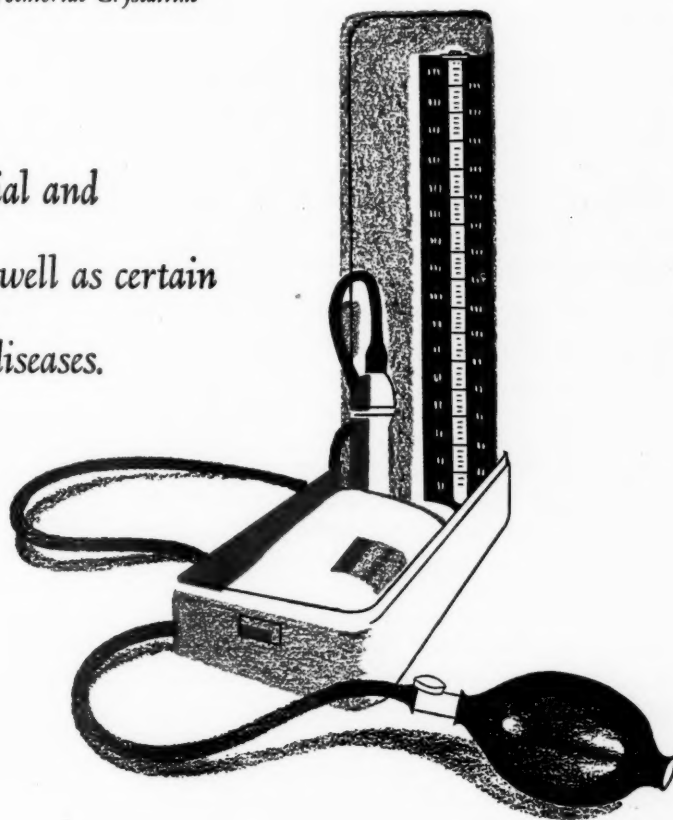
A half-world away, another physician is administering chloromycetin to a desperately sick child. Another life is saved by this drug, found effective in treatment of more than thirty diseases.

(Continued on Page 1344)

AUREOMYCIN

Hydrochloride Crystalline

*Effective against many bacterial and
rickettsial infections, as well as certain
protozoal and large viral diseases.*



The Geriatrist looks always for a treatment which shall act effectively to curb infection, without unduly upsetting normal metabolic processes and immunologic responses. Aureomycin provides a maximum anti-infectious effect with a minimum of disturbance. Infection in the elderly is more apt to be subacute, or chronic, than acute; and of mixed rather than pure type. Under such conditions, the oral effectiveness and broad activity of aureomycin make it of exceptional value.

*Capsules: 50 mg.—Bottles of 25 and 100. 250 mg.—Bottles of 16 and 100.
Ophthalmic: Vials of 25 mg. with dropper; solution prepared by adding 5 cc. distilled water.*

LEDERLE LABORATORIES DIVISION *AMERICAN Cyanamid COMPANY*

30 Rockefeller Plaza, New York 20, N. Y.

TOO BUSY TO CELEBRATE

(Continued from Page 1342)

Throughout the free world, physicians in their offices are writing prescriptions for those who are ill. Ninety per cent of the prescriptions couldn't have been written fifteen years ago. The drugs didn't exist.

Behind adrenalin, chloromycetin and a host of other important drugs is Detroit's Parke, Davis & Co. which is 85 years old today.

On October 26, 1866, soon after the end of the Civil War, Dr. Samuel P. Duffield, a druggist at Gratiot and Woodward, and Hervey C. Parke founded the firm. In 1867, George S. Davis became a member.

With the development of adrenalin in 1901, the firm stepped into the front rank of drug research.

Outstanding developments of succeeding years—just to name a few—have been dilantin for epilepsy, promin and promizole for leprosy, benadryl for allergies, camoquin for malaria, kutrol for ulcers, surital, an anesthetic, and chloromycetin, the great killer of germs, introduced just two years ago.

There is no formal celebration today for the 9,000 employes of Parke, Davis & Co. They are busy, said Harry J. Loynd, the president, for:

"Right now important progress is being made on drugs that will become news a few months or a few years hence."

For Parke, Davis & Co. there have been eighty-five good years—years which have benefited millions of people.

Millions more will benefit in the next eighty-five years.—*Detroit Times*, October 26, 1951.

WE CAN HELP OURSELVES

Consider these recent developments:

The Greater Detroit Hospital Fund reports that the 200-bed St. John Hospital is near completion, two other new hospitals are half finished and six additions to existing hospitals are under way under its \$19,700,000 hospital improvement program.

The University of Michigan has the largest freshman medical class in the United States, a record 204 students.

A building permit has been issued for construction on Wayne University's new \$3,237,000 medical college building.

The Michigan Medical Service, sponsored by Michigan doctors, now has reached a total of 2,300,118 enrolled, and thousands of other families are protected by other hospital insurance groups.

These are just a few of the outstanding developments which show that we are going constantly forward in our protection of lives and health despite discouraging setbacks.

They show something else, too—the health of our Republic.

They show that a determined people, with ingenuity and faith in themselves, continue able to meet their own problems out of their own resources.

These developments—and many more could be listed—give the lie to those who claim that our way of life, as we now live it, fails to protect the health of our people.—*Detroit Times*, October 27, 1951.

Census figures of men over sixty-five in 1948 who were not in charitable institutions show that 11 per cent were penniless; 45 per cent had annual incomes under \$1,000; 40 per cent had incomes between \$1,000 and \$5,000; and only 4 per cent had incomes over \$5,000.—*Selected*.

* * *

How is socialized medicine coming along in Great Britain? Cecil Palmer, an English publisher, author and journalist, has this report: "There are tragically long waiting lists for admission to hospitals. The number is officially admitted to be more than 500,000. There are also at least 10,000 serious tuberculosis victims awaiting admission to sanatoria. At the same time, there are thousands of empty beds because the available professional personnel cannot cope with the demand for its skilled services . . . The blunt truth is that nationalized medicine is facing a financial crisis. Overburdened British taxpayers now realize that they are paying far too much for far too little."—*Selected*.

* * *

A Commonly Held False Belief:

That since World War I the population of the United States has increased much faster than has the number of physicians.

The Actual Facts:

In 1920 we had 144,977 physicians for a population of 105,710,620 persons.

In 1950 we have 201,277 physicians in the United States for an estimated 153,000,000 persons.

The gain in population for the thirty years is about 45 per cent; the gain in number of physicians for the thirty years is about 39 per cent.

In 1920 we had one physician for every 729 persons; in 1950 we have one better trained physician to every 760 persons.

Crucial to an understanding of this problem is the fact that the physician of today—

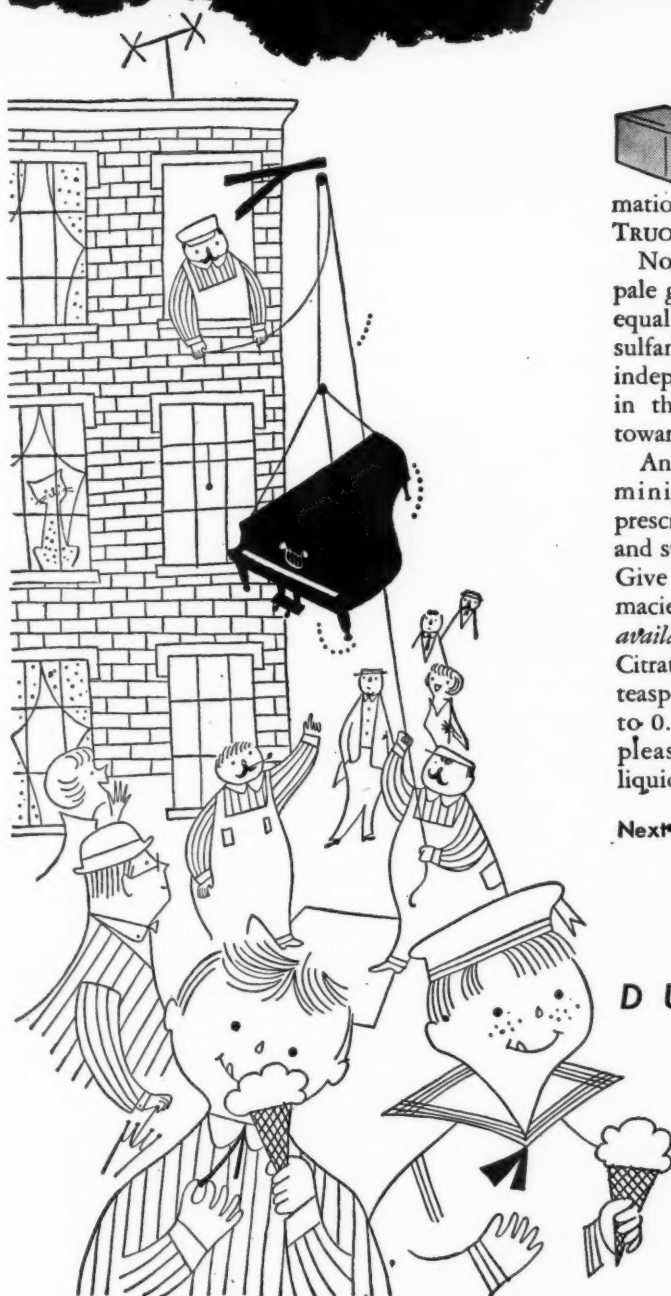
- (1) is much better trained than the physician of 1920,
- (2) has a great deal more assistance from nurses, technicians and other auxiliary personnel and equipment,
- (3) sees more of his patients in hospitals and is required to spend a much smaller part of his time in travel, and

The physician's availability must be measured by time rather than distance.

nothing competes with the
Lure of Sweets . . .

now you can use it in

**triple
sulfonamide
therapy**



From problem child to model patient—that's the pleasant transformation when you prescribe new, candy-like TRUOZINE *Dulcet* Tablets.

No reminder of bad tasting medicine in these pale green, good-tasting cubes. Yet it's there—equal parts of sulfadiazine, sulfamerazine and sulfamethazine. These combined drugs, being independently soluble in the urine, can be given in therapeutic dosage with far less tendency toward crystalluria than with single sulfonamides.

And TRUOZINE *Dulcet* tablets are easy to administer. Mother merely counts out the prescribed number of cubes. Uniform potency and stability assure exact dosage. See for yourself. Give TRUOZINE *Dulcet* tablets a trial. At pharmacies in bottles of 100, 0.3-Gm. tablets. Also available: TRUOZINE Suspension with Sodium Citrate. Supplies 1.5 Gm. sodium citrate per teaspoonful, as a built-in alkalinizer, in addition to 0.3 Gm. of combined sulfonamides. This pleasant tasting, non-settling liquid is supplied in pint bottles. *Abbott*

Next time, specify

truozine
TRADE MARK
DULCET® TABLETS

(METH-DIA-MER-SULFONAMIDES,
ABBOTT)



Political Medicine

NEW SENATE LEGISLATION

We commented some months ago that sentiment was building up to a new EMIC. If any doctor believes piecemeal socialization is not impending, read these new Senate Bills.—EDITOR.

S. 2337. EMIC. By Mr. Lehman, of New York, October 20.

To provide for the national defense by enabling the States to make provision for maternity and infant care for wives and infants, and hospital care for dependents, of enlisted members of the Armed Forces during the present emergency, and for other purposes.

Referred to the Committee on Labor and Public Welfare.

Comment: Would establish a maternity and infant care program for dependents of enlisted personnel of the Armed Forces (below the grade of Warrant Officer) to be administered at the state level. The Children's Bureau would have available such sums as may be necessary to carry out the provisions of the bill and is authorized to assist states which have an acceptable plan. State Departments of Health would administer the program and would be required to make periodic reports called for by the Administrator of the FSA. The cost of the program would be supported equally by the federal government and the state. The creation of a State Advisory Council composed of representatives of medical, nursing, and hospital groups and the public is required. The Federal Security Agency Administrator would issue regulations after consulting with a committee representing state health authorities. The Administrator would consult also with a fifteen-member national advisory council representing medical, nursing, hospital groups and the public—Members of the advisory council to be selected by him.

These aforementioned provisions of the bill are similar to the program in effect during World War II. However, a second title to the bill seeks to establish a new program—a federal-state program on a fifty-fifty matching financial basis to furnish hospital services to *all bed patient dependents* of enlisted members of the Armed Forces regardless of age. A state would be required to submit a plan to be administered by its state health agency. As in the proposed EMIC program an advisory council must be established. A state program is also required to assure the furnishing of hospital services at reasonable costs. The Administrator of the FSA before making regulations would consult with a committee representing state health authorities. The Administrator would have a national advisory council similar to the one proposed by the EMIC program.

The bill contains definitions which apply to both the EMIC and the general hospitalization sections. The term "maternity care" means "such hospital, medical, nursing, and related services in connection with pregnancy and child-birth as may be included in regula-

tions of the Administrator." The term "infant care" means "such hospital, medical, nursing and related services in connection with the care of an infant" (up to five years) as may be included in the regulations of the Administrator. The term "hospital services" means "the following services, drugs, and appliances furnished by a hospital to any individual as a bed patient: bed and board and such nursing services, laboratory services, ambulance service, use of operating room, staff services, and other services, drugs and appliances, as are customarily furnished by such hospital to its bed patients either through its own employes or through persons with whom it has made arrangements for such services, drugs, or appliances; but such term shall not include (1) any medical or surgical care except as is generally furnished by hospitals as an essential part of hospital care, or (2) hospitalization by any hospital which furnishes primarily domiciliary care."

S. 2246. CHRONIC DISEASES. By Mr. Lehman, of New York, October 11.

To amend the Public Health Service Act to authorize greater assistance to the States in extending and improving health services for the prevention and reduction of chronic diseases.

Referred to the Committee on Labor and Public Welfare.

Comment: With the exception of a minor addition of language this bill is identical with S. 4180, 81st Congress, introduced by Senators Lehman and Murray. Bill provides \$10,000,000 annually to be available for distribution by the Surgeon General, U. S. Public Health Service, to states and state subdivisions in establishing and maintaining *public health services* for the *early detection of chronic diseases* and for the referral of sufferers of chronic diseases to medical personnel, hospitals, institutions, and agencies. The bill does not specify that funds provided be used for indigents only. Therefore it must be assumed federal funds could partly or wholly support programs for all persons regardless of financial status.

S. 2247. DIAGNOSTIC CLINICS. By Mr. Lehman, of New York, October 11.

To amend the Public Health Service Act to authorize grants to the States in extending and improving diagnostic out-patient health services.

Referred to the Committee on Labor and Public Welfare.

Comment: Identical with S. 4181, 81st Congress, which Senator Murray co-sponsored. Would authorize \$25,000,000 for the first year and \$50,000,000 annually thereafter so that the Surgeon General of the U. S. Public Health Service could assist, through grants, states and other political subdivisions of the states in establishing and maintaining *out-patient services* in hospitals and health centers for early detection of diseases and

(Continued on Page 1348)



THE HAVEN SANITARIUM, INC.

1850 PONTIAC ROAD

ROCHESTER, MICHIGAN

Telephone Olive 1-9441

LEO H. BARTEMEIER, M.D.

Chairman of the Board

HILBERT H. DE LAWTER, M.D.

Clinical Director

MR. GRAHAM SHINNICK

Manager

A private hospital 25 miles north of Detroit for the diagnosis and treatment of mental and emotional illness—psychoanalytically trained resident physicians.

Refresh...add zest
to the hour



NEW SENATE LEGISLATION

(Continued from Page 1346)

referral of persons suffering therewith to medical personnel, hospitals, clinics and agencies. Financial assistance would also be used in providing treatment, home-care services, and community planning for the ambulatory sick. The bill does not specify that funds provided be used for indigents only. Therefore it must be assumed federal funds could partly or wholly support programs for all persons regardless of financial status.

S. 2248. GROUP PRACTICE AND DIAGNOSTIC AND HEALTH CLINICS.—By Mr. Lehman, of New York, October 11.

To authorize loans to assist in the establishment of clinics or medical groups, designed to afford improved diagnostic service or improved diagnostic and curative service.

Referred to the Committee on Labor and Public Welfare.

Comment: With the exception of adding one provision this bill is identical with S. 4182, 81st Congress, in which Senator Murray joined this author as a co-sponsor. Would authorize \$10,000,000 the first year and \$20,000,000 annually for four succeeding years for distribution as loans by the Surgeon General, U. S. Public Health Service, to assist in the *establishment of clinics and medical groups* furnishing diagnostic or curative services. The Surgeon General would consult with a Federal Hospital Council (purely advisory). Eligible borrowers include: (1) A group of physicians, or physicians and dentists, authorized by state law to render medical and dental services; and (2) medical schools, teaching hospitals and other public or private organizations (this second classification must be non-profit), which maintain a staff of physicians engaged in diagnostic services or diagnostic and curative services. Physicians, or physicians and dentists, engaged in group practice, to be eligible for loans must conform to regulations issued by the Surgeon General by having a prescribed balance of specialists and general practitioners and prescribed office facilities, laboratory, nursing staff, and records. They must also render services to all patients referred by welfare agencies and agree to accept payment as specified by regulations. Medical schools, teaching hospitals and other nonprofit organizations to be eligible must also agree to conform with regulations. Ten year loans may be used for cost of acquisition, construction, and equipment of new facilities, or the expansion or alteration of existing buildings. Loans may also be used for meeting the cost of maintenance and operation not exceeding three years.

SOCIALIZED MEDICINE GAINS FROM CIO AWARD

The Committee for the Nation's Health, Inc., is \$10,000 richer in its battle to promote socialized medicine in the United States—thanks to Senator James E. Murray (D., Mont.).

Business Action, a weekly paper from the Chamber of Commerce of the United States, reports that a plaque and a \$10,000 check were awarded by the CIO to Mur-

ray for the senator's "outstanding service to humanity." Kind-hearted Murray announced that the money would be turned over to charity.

The charity he referred to is the Committee for the Nation's Health, Inc., headed by Channing Frothingham. The committee lobbies for socialized medicine in this country.

Honorary chairman of the Committee for the Nation's Health is CIO President Philip Murray (no relation to the senator), in whose name the \$10,000 check to Senator Murray was given. The check and the plaque constitute the CIO Community Services Committee's annual Philip Murray award.—AMA Secretary's Letter.

PANEL MAJORITY URGES NO RESTRICTIONS ON UNION HEALTH PLANS; INDUSTRY DISSENTS

U. S. Wage Stabilization Board has been advised to approve *conventional* medical, surgical and hospital insurance as part of union contracts *without offsetting their cost against allowable wage increases*. The recommendation comes from a majority of a special tripartite panel appointed to determine to what extent these fringe benefits might be permitted without contributing unduly to inflation.

In effect, the labor and public members of the panel told the board their studies indicated that labor and management should be allowed to negotiate and put into effect any reasonable, average-type health insurance program, *without prior approval of the Wage Stabilization Board*. These benefits, they said, are not inflationary and for this reason need not be considered as wages, which are subject to definite controls.

Signing the report were the two *public* members of the panel, Wilbur J. Cohen, technical adviser to U. S. Social Security Commissioner, and John W. McConnell of the Twentieth Century Fund; and the two *labor* members, Harry Becker, director of the social security department, United Auto Workers (CIO), and Carl Huhndorff, director of research, International Association of Machinists (AFL). A dissenting report will be filed by the two *industry* representatives, Clifford F. Hawker, vice president, Armstrong Cork Co., and Frederick P. Sloat, actuary of the G. Gilson Terriberry Company.

The report reviews futile efforts to find a practical control yardstick for these benefits, but finally settles for only one limitation: a report to the board within sixty days after a program has been put in operation. The board then would be in a position to impose controls if necessary at some future date.

The problem arises because the wage stabilization policy tends to freeze the wide disparity in benefits among various union health and welfare contracts and to *halt the spread of health and pension plans in industry*. In recommending minimum standards for health programs, the majority suggests not less than seventy days protection for each hospital admission. Where medical programs are not available in the community, the report suggests cash indemnification be limited to payments for diagnostic services, major and costly illnesses and

(Continued on Page 1350)

Check these features of the new
WELCH ALLYN
ANOSCOPE



Now
 available
 in 4 sizes

*Shadow-free, brilliant illumination. No external light source required.

*Offset obturator handle ring facilitates insertion and manipulation.

*Specula instantly detachable for sterilization.

*Scientifically shaped for painless examination.

*Designed for use with Welch Allyn battery handle.

(Adaptors available for attachment to other type handles.)

NOBLE-BLACKMER, INC.

267 West Michigan
 Jackson, Michigan



Vernor's
 GINGER ALE



Developed by Michigan's First Registered Pharmacist

Recommended by Eminent Michigan Physicians

FLAVOR MELLOWED 4 YEARS IN WOOD

A PREFERRED BEVERAGE FOR HOME AND HOSPITAL

Military Medicine

UMT COMMISSION OPPOSES SERVICEMEN'S DISABILITY BENEFITS FOR TRAINEES

The five-man National Security Training Commission, in its report to Congress on the Universal Military Training program for eighteen-year-olds, *recommends against placing trainees in the same status as servicemen for post-service medical benefits.* Instead, it proposes that disability and sickness growing out of UMT training be compensated for under Federal Employees Compensation Act, which is operated by the Labor Department. This is one of a series of proposals that will be acted on by Congress. The Commission was required to report a program by October 29, although Congress is not bound by its findings. On benefits, the report states:

"As a matter of principle, we do not believe the many ancillary benefits awarded to military veterans are warranted for trainees in a 6-months program; moreover, *we believe the cost would (be) exorbitant over a period of time, even if, as is expected, the number of trainees who suffer disability as a result of injury or sickness should be very small.*"

In testimony before the Commission last August, the AMA opposed extension of medical and hospital benefits for any non-service-connected disabilities of UMT trainees. The AMA also urged that youths whose aptitudes indicated they could make their best contribution as trained professional men be deferred so they could finish their education. On this point, the Commission reported:

"We believe there should be *no deferments for college students other than the deferment through the current academic year.* . . . We believe that all persons who intend to enter upon the study of medicine, dentistry, the several sciences, or professional training other than military, should take their training in the corps before beginning such study." . . . However, the Commission said that Congress and the Defense Department should look into the *possibility of holding in abeyance the reserve status of an unspecified number of medical, dental and scientific students until they finished their education.* After that they would be subject to seven and one half years of reserve duty.

The Commission also recommended that (a) present physical acceptance requirements not be lowered for trainees, (b) trainees be given hospitalization, medical, surgical and dental care while members in the corps, (c) creation of a small group of civilian inspectors, responsible solely to the Commission, who will be free to inspect UMT units on such matters as health, housing, food and recreation.

On the issue raised by AMA that the government should not rehabilitate 4-Fs, the Commission only stated that the mentally and physically handicapped should be excluded from UMT. Other points raised by AMA but not discussed in the 123-page Commission report were (a) utilization of civilian physicians and reservists for

pre-induction, induction and periodic physical examination and (b) establishment of a national civilian agency to insure proper distribution of medical and other health resources between civilian and military needs.

ARMY TO RECALL 165 DENTAL RESERVISTS IN JANUARY

The Department of the Army announced November 2 that it would order 165 recently commissioned dental Reserve officers to active duty in January. Dentists covered by the new call-up accepted commissions after registering with the Selective Service under provisions of Public Law 779 (doctor-dentist registration act). All were classified as Priority I.

Under the law, Priority I registrants are defined as those educated at Government expense or deferred from service to pursue a medical or dental education and who spent less than 90 days on active service in World War II following their training.

The precise date when dentists must report for duty under the new order has not been determined. All will receive at least 30 days' notice in which to arrange their personal affairs before reporting for the dental officers' basic course at the Medical Field Service School, Fort Sam Houston, Texas. Upon completion of the five-week orientation course, they will be assigned to medical installations here and abroad.

Quotas set for the six continental Army areas are as follows: First Army, 40; Second Army, 10; Third Army, 20; Fourth Army, 25; Fifth Army, 40; and Sixth Army, 30.

Regional quotas were determined by the Army after consultation with civilian dental and health authorities in order to ensure the continuance of adequate dental care in areas affected by the new call-up. To date, the Army has ordered 1,076 Priority I dental reservists to active duty, including November call-up of seventy-eight.

UNION HEALTH PLANS

(Continued from Page 1348)

care in hospitals or clinics. It proposes that fee schedules be based on Veterans Administration payments or fees used by physicians under community-wide non-profit plans.

The report is in no way binding on Wage Stabilization Board. Like the panel, it too is representative of labor, industry and the public. Copies of the majority report, *Health, Welfare and Pension Programs Under Wage Stabilization*, may be obtained from the Wage Stabilization Board, Washington 25, D. C.

The JOURNAL

of the Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

VOLUME 50

DECEMBER, 1951

NUMBER 12

New Hope for Hearts

TODAY'S "New Hope for Hearts" is more than a slogan, it is a great and exciting reality . . . for today there is real HOPE in the fight against all types of heart disease. . . . HOPE for millions of heart invalids who can now, through knowledge of surgery, drugs, care and treatment, live useful and even normal lives. Without this knowledge and care, many of those now living would have died. HOPE, because the causes of heart disease can be learned through research; HOPE for our children who suffer from rheumatic fever and rheumatic heart disease. . . . HOPE in the prevention of recurrence of rheumatic fever. HOPE now exists for older people afflicted with heart disease. . . . HOPE in better management and prevention of complications.

Through its research, education and community service programs, the Michigan Heart Association is conducting an intensive triple-front attack upon all cardiovascular diseases . . . a concerted attack which will hasten the day when the control of heart diseases will be closer to realization. The heart research being carried out in Michigan under the sponsorship of the Michigan Heart Association helps to advance the level of scientific knowledge as well as to raise the calibre of medical care immediately available to the citizens of the State.

The continuing education of our medical doctors concerning newer knowledge of cardiovascular disorders will be continued and expanded along with the Association's public education program for it is recognized that such information must be disseminated if both the patient and the Doctor of Medicine are to benefit.

Active participation in community service projects such as health programs, urban and rural health betterment activities and many other functions will be continued during the coming year, as well as an expansion of already existing Association programs. The Doctors of Medicine and the people of Michigan may be certain that the Michigan Heart Association will continue to serve them honestly, sincerely, and competently.

DOUGLAS DONALD, M.D.
President
Michigan Heart Association

Heart Research in Michigan

By Franklin Johnston, M.D.

Chairman, Research Committee

Michigan Heart Association

Ann Arbor, Michigan

THE RESEARCH projects supported by the Michigan Heart Association may be divided logically into three groups.

The first of these is concerned with studies carried out on patients to evaluate new types of treatment or new diagnostic methods. For example: studies on the value of ACTH or cortisone in the treatment of acute rheumatic fever are being carried out under the supervision of Manes Hecht, M.D., and J. A. Johnston, M.D., of Detroit and by Noyes L. Avery, M.D., Grand Rapids, work being done by M. S. Chambers, M.D., Flint, and Donald C. Overy, M.D., Ann Arbor, to evaluate the place that the flicker photometer may have in the diagnosis of heart disease, and finally studies on the value of new anticoagulants are being directed by F. Janney Smith, M.D., Detroit. The importance of this type of research is obvious. Long clinical experience and good judgment are necessary in the interpretation of the results if the studies are to be worthwhile.

The second type of research is concerned with the development of new or improved methods for the diagnosis or treatment of heart disease and most of the remaining projects supported by the Michigan Heart Association fall into this group. Most of the studies being carried out by Gordon B. Myers, M.D., Detroit, and associates, those under the direction of Conrad R. Lam, M.D., Detroit, and the work being done by Sibley W. Hoobler, M.D., Ann Arbor, and his group may be placed in this category. It is scarcely necessary to point out that studies of this kind are just as important as those of the first group.

The third type of investigation has often been called fundamental or pure research. These terms imply that the studies are highly scientific and theoretical and may have no immediate practical value or application. Only one project aided by

the Michigan Heart Association can be placed in this group. This is a study of "Streaming Potentials" being conducted by a young chemical engineer with help from David Bohr, M.D., of the Department of Physiology in Ann Arbor. Although some individuals might question the use of funds contributed by the public to support studies of this kind, some of the most important discoveries in recent years have been made directly or indirectly as a result of research that started with no practical objective in view.

Many research projects will be completed and little of immediate practical value be accomplished. Nevertheless, if the study has been carefully done and recorded with accuracy, it may at some later date serve as the starting point for an investigation of great value. Good research is done only by well-trained and scrupulously honest investigators, and great contributions are made by only a few men (or women) who have the spark of genius as well as the other basic qualities.

The Research Committee of the Michigan Heart Association is quite aware of these matters and is attempting to make the best possible use of funds that are available for research work primarily by careful selection of individuals who will be responsible for the projects.

Research Projects Supported by the Michigan Heart Association

In existence for slightly more than two years, the Michigan Heart Association has already sponsored twenty-one research projects into the perplexing problems of diseases of the heart and circulatory system. Promising clues and hints of exciting discoveries to come are uncovered from time to time in these projects; however, long painstaking, repeated tests and further explorations are necessary before valid conclusions can be drawn. Studies completed to date point up the great importance and need for continued research so that present techniques can be perfected and new techniques developed in order to bring about the alleviation of suffering and untimely death due to heart disease.

Support of the Michigan Heart Association through contributions to united campaigns has made the following research projects financially possible during the period from July 1, 1950, through June 30, 1951.

HEART RESEARCH IN MICHIGAN—JOHNSTON

Current Research Projects

*Wayne University College of Medicine, Detroit
Department of Medicine*

Grant: (1950-1951) \$21,600; (1951-1952) \$23,200

Investigator: Gordon B. Myers, M.D.

This project is a continuation of previous work in cardiorenal research in the Departments of Medicine and Chemistry at Wayne University under the joint support of the Michigan Heart Association and the National Heart Institute. Eight scientific papers have been published during this year, and four additional papers were presented at national medical meetings. These deal with the effectiveness of an extremely low salt diet in patients who fail to respond to the usual methods of treatment of dropsy due to the heart, showing very beneficial results. Another paper deals with a new chemical agent, Regitine, which has proved to be a useful diagnostic and therapeutic agent in cases of high blood pressure due to tumor of the adrenal gland.

Catheterization of the heart is being used for selection of those cases of rheumatic heart disease which may prove to be suitable for operation on the deformed heart valve and also for the evaluation of the operative results. Twenty patients with mitral stenosis have been thus studied.

These studies on the dynamics of the circulation and on the various salts are being continued. In addition, preliminary studies in the use of a calcium complexing agent in the study of experimental hardening of the arteries has been started.

University of Michigan Medical School—Ann Arbor—Department of Internal Medicine

Grant: (1950-1951) \$7,500; (1951-1952) \$8,000

Investigator: Sibley W. Hoobler, M.D.

This grant was made to conduct research into the problems of hypertension and uremic poisoning. An artificial kidney has been constructed at the University of Michigan. It has been used successfully in the treatment of a patient suffering from poisoning due to shutdown of the kidneys and has also been used to remove an ultrafiltrate of blood from patients who have malignant hypertension to study the circulating substances which cause high blood pressure.

*Henry Ford Hospital, Detroit
Department of Medicine*

Grant: (1950-1951) \$1,500.

Investigator: F. Janney Smith, M.D.

This grant was for the study of the clinical use of anticoagulant drugs in acute myocardial infarction. In all, 275 patients were studied. The effectiveness and dangers of two new anticoagulant drugs, Tromexan and Paritol, were compared with Dicumarol which had been extensively studied previously. The results of these studies are being incorporated statistically with figures from other

parts of the country, and four papers have been published.

Hurley Hospital, Flint

Department of Internal Medicine

Grant: (1950-1951) \$1,000

Investigator: M. S. Chambers, M. D.

These funds were made available to Dr. Chambers in December, 1950. The study is well under way, but it is too early as yet to furnish any factual report. The study is concerned with evaluating the usefulness of the flicker photometer as a method of detecting early evidence of diseases of the heart or blood vessels caused by hardening of the arteries.

Blodgett Memorial Hospital, Grand Rapids

Grant: (1950-1951) \$1,000

Investigator: Noyes L. Avery, M.D.

This grant for the study of ACTH and cortisone in acute rheumatic fever was made available to the investigator in the middle of the year. In the last three months they have treated six cases of acute rheumatic fever with these hormones. In all cases there has been a prompt disappearance of the fever and of the pain. It is as yet too early to say what effect there will be on the ultimate outcome of these cases from the point of view of cardiac damage. These patients are being followed after their discharge from the hospital in order to evaluate this aspect.

Henry Ford Hospital, Detroit

Department of Surgery

Grant: (1950-1951) \$9,000; (1951-1952) \$6,000

Investigator: Conrad Lam, M.D.

A number of different advances in cardiac surgery have been studied in the Surgical Research Laboratory at Henry Ford Hospital as a result of this grant.

1. *The aortic valves have been transplanted* in dogs, proving that homografts of these valves survive very well and function as long as there is need for them. A paper based on these studies is being prepared.

2. *Sterilization of Homografts.*—Diacetyl ethylene was used in the sterilization of blood and plasma and for the storage of thoracic aortas obtained at routine autopsies, then stored and transplanted into another animal. Forty-one grafts were transplanted, but only fourteen functioned. It was concluded that the chemical used is detrimental to the vascular tissues.

3. *Mesothelial Grafts in Vascular Repair.*—A tube was made from the lining of a certain abdominal muscle and used to replace a complete segment of blood vessel. Roughly, one-half of these were unsuccessful. Better results were found later in the series due to improvement in technique as more experience was gained.

4. *Application of the Hathaway Electronic Pressure Recording System to Experimental and*

Clinical Cardiovascular Surgery.—This apparatus was first used in the aortic valve experiments described above and later its application in the study of patients undergoing mitral valve surgery. Thirty-four patients have been studied in this way. The degree of success attending this operation has been predictable by a study of postoperative tracings. This study has been presented before two scientific societies and was presented before the Forum of the International Society of Surgery in Paris in September, 1951.

5. *Effects of Ligation of Branches of the Intra-thoracic Aorta.*—The intercostal arteries were ligated in ten dogs in order to study neurological sequelae which might be anticipated if large blow-outs of the aortas in humans are to be removed. One dog showed paralysis of the hind limbs which persisted and one showed a very transient paralysis. Details of this have been published in two scientific reports and were presented verbally at one surgical meeting.

University of Michigan, Ann Arbor
Department of Physiology
Grant: (1950-1951) \$6,950
Investigator: David Bohr, M.D.

Studies in the Department of Physiology at the University of Michigan have been made in the field of high blood pressure research. The role of the nervous system and of certain hormonal factors have been studied. In addition, studies of the material put out by the artificial kidney have been made to determine their effect on blood pressure and kidney function. All of these studies have contributed towards finding new facts concerning high blood pressure and advancing our knowledge of this disease.

Children's Hospital of Michigan, Detroit
Grant: (1950-1951) \$5,000; (1951-1952) \$5,000
Investigators: Paul V. Woolley, M. D., and Manes Hecht, M.D.

This is the first year of a continuing study of the effects of the hormones, ACTH and cortisone, on acute rheumatic fever and on the ultimate outcome of these cases. Twenty-eight cases have been studied. A complete appraisal is not as yet possible, but it is becoming evident that neither cortisone nor ACTH will be the miracle drug in rheumatic fever that was originally hoped.

Henry Ford Hospital, Detroit
Department of Pediatrics
Grant: (1950-1951) \$5,000; (1951-1952) \$5,000
Investigator: J. A. Johnston, M.D.

This study was made to determine by balance methods the effect on the nutritional state of children of the use of ACTH in the treatment of acute rheumatic fever and rheumatic heart disease. It has formed the basis of a scientific paper and is being read before two different groups of pediatricians. It was found that although nitrogen loss

was increased in the urine, there was a greater increase in intake, thus resulting in actual gain in body nitrogen, which is the source of tissue protein. Studies on calcium balance showed no consistent effect. The basal metabolic rate was also studied. This was found to fall when the hormone was given to patients with an active process. These studies point out that the negative balance of nitrogen seen when the hormones were given can be converted to a positive balance if the intake can be increased.

University of Michigan Medical School, Ann Arbor—Department of Internal Medicine
Grant: (1950-1951) \$2,000; (1951-1952) \$2,500
Investigator: Franklin D. Johnston, M.D.

Studies on vibrations of low frequency over the precordium carried out with the help of a grant from the Michigan Heart Association are of clinical importance because many of these vibrations can be seen or felt by any physician who is aware of their existence and will look for them. Most of them are inaudible because the frequency is below the audible range. The instrument that has been used to record these vibrations is not usually available to physicians in practice but the study of these phenomena by the average doctor is well worth while since their recognition may help in the diagnosis and in estimating the outlook of heart patients.

University of Michigan Medical School, Ann Arbor—Department of Surgery
Grant: (1950-1951) \$2,575
Investigator: Cameron Haight, M.D.

Dr. Cameron Haight, assisted by Dr. R. Adams Cowley, has been engaged in the construction of a technical apparatus for measuring changes in the blood flow in the arteries of the heart, and it is hoped that this can then be applied to the improvement of methods for providing a new blood supply to alleviate the lack of blood to certain areas of the heart which may be responsible for angina pectoris and coronary thrombosis.

University of Michigan Medical School, Ann Arbor—Department of Pediatrics
Grant: (1950-1951) \$5,000; (1951-1952) \$5,000
Investigators: James L. Wilson, M.D., and A. L. Stern, M.D.

This grant was made for the continuation of research in congenital heart disease. This includes the improvement of existing diagnostic procedures. In addition, a new approach in the observation of the mental status of the "blue babies" is being made. Comparison of the blood oxygen levels before and after corrective heart surgery is being made with brain wave studies and psychological testing. To date, 100 children born with heart disease have been studied, and a considerable number have been recommended for heart surgery and successfully treated.

HEART RESEARCH IN MICHIGAN—JOHNSTON

Harper Hospital, Detroit

Department of Research

Grant: (1951-1952) \$6,000

Investigator: F. D. Dodrill, M.D.

This grant was made so that research work started in 1949 could be continued in the study of abnormalities of the heart by means of x-ray examination.

For the accurate diagnosis of some forms of heart disease, it would be helpful to determine just how the blood flows through the heart chambers and the great vessels. If surgical treatment is contemplated, it becomes of utmost importance to determine, as accurately as possible, not only the precise nature of the trouble but also the extent of the disorder and where in the heart or great vessels it is located. The ingenious diagnostic x-ray technique, which has been developed in this research project, consists of the x-ray motion picture photography of the passage through the chambers of the heart and the great vessels of radio-opaque material which has been injected into the large vein. The physician and surgeon may then study the projected film to learn the nature, magnitude and exact location of the trouble. This technique is particularly useful in studying congenital or developmental cardiac defects. At present, research is being directed toward the surgical correction of congenital defects in the wall that separates the auricles of the heart, a spectacular attack upon disease which is almost inaccessible, being in the very center of the interior of the heart.

*University of Michigan Medical School,
Ann Arbor—Department of Pharmacology*

Grant: (1951-1952) \$4,000

Investigator: F. E. Shideman, M.D.

Present-day treatment of cardiac failure emphasizes a dietary restriction of sodium chloride and elimination of sodium from the body by means of various diuretic drugs. Sometimes these methods are not too successful. This investigation into the biochemical pathways by which sodium chloride is handled by the kidney has as its ultimate objective the discovery of a means by which it may be possible to inhibit the renal tubular reabsorption of sodium in a manner already known to be possible in the case of penicillin through the action of Carinamide which suppresses its tubular secretion.

Henry Ford Hospital, Detroit

Department of Medicine

Grant: (1951-1952) \$1,000

Investigator: Ben E. Goodrich, M.D.

Normal subjects show increased arterial capillary oxygenation during exercise as shown by continuous photo-electric determinations of capillary blood in an ear lobe. The influence of standard exercise upon capillary oxygenation in patients with angina pectoris and the electrocardiographic abnormali-

ties will be studied, utilizing normal room air and one hundred per cent oxygen. The behavior of peripheral capillary blood oxygenation under these circumstances is not known at the present time.

*University of Michigan Medical School,
Ann Arbor—Department of Surgery*

Grant: (1951-1952) \$1,700

Investigator: Cameron Haight, M.D.

A two-fold study of respiratory function and cardiovascular evaluation in the cardiac patient as well as a more detailed study of the cardiac function of patients who are to undergo pulmonary operations. This will be correlated with already existing facilities for determining respiratory function.

*University of Michigan, Ann Arbor—Department
of Chemical and Metallurgical Engineering*

Grant: (1951-1952) \$1,320

*Investigators: Cedomir Sliepceovich, Ph.D., and
Mr. Phillip E. Bocquet*

This grant is to provide a fellowship for Mr. Phillip E. Bocquet. He is to study the application of the "streaming potential" to various physiological mechanisms. This is a fundamental type of research in which the field of chemical engineering is being applied to a body mechanism in order to develop new means of measuring and testing body function to provide ultimately new, speedier and more accurate means of diagnosis of cardiac disorders.

Henry Ford Hospital, Detroit

Department of Medicine

Grant: (1951-1952) \$500

Investigator: B. E. Goodrich, M.D.

The coagulation of the blood plays an important part in the causation of coronary thrombosis. This project concerns itself with the study of the effect of certain drugs and other substances on the clotting of the blood in the arteries of the body. This project is a continuation of work started in 1949.

*Wayne University College of Medicine, Detroit
Department of Microbiology*

Grant: (1951-1952) \$500

Investigator: Fred Rights, Ph.D.

The exact organism responsible for weakening of the heart muscle due to inflammation has not as yet been definitely identified. Because bacteria have not been isolated from the blood of persons with this disease, it has been assumed to be due to a virus. The purpose of this project is to study the blood and other specimens from persons acutely ill from "pericarditis" and "myocarditis." This study will endeavor to isolate the exact virus or other organism responsible. This step is necessary in order that the correct antibiotic can be chosen to combat this infection as early as possible.

Education and Community Service Projects

By Carleton Dean, M.D.
Chairman Program Committee
Michigan Heart Association
Lansing, Michigan

SIDE BY SIDE with the march of research during the past year has been the accelerated tempo of the Michigan Heart Association's programs of Education and Community Service.

Public and Professional Information

Although research is the primary aim of the Michigan Heart Association, another important major facet of its many essential activities is the continuing development of a vigorous binary educational program. One function of this dual-purpose program is designed to increase public understanding of heart disease as well as to interpret the policies, projects and plans of the Michigan Heart Association. Another phase consists of providing the Doctor of Medicine with the most recent scientific information available on cardiovascular diseases.

In order to eliminate fear of heart disease, to prevent harmful misconceptions, to tell the people of Michigan how they can protect their hearts and to keep them informed of the progress being made in controlling and treating cardiovascular diseases, realistic and authentic information is presented to the public through various communication media. This includes news releases and stories, radio announcements and programs, magazine articles, television broadcasts, speakers bureaus, motion pictures, exhibits, pamphlets, letters, bulletins, et cetera. These activities are continually being broadened in scope as new demands for the latest information on diseases of the heart and circulatory system are made and new knowledges become available.

To help the Doctor of Medicine keep pace with new theories and techniques in the cardiovascular field is one of the primary responsibilities of the Michigan Heart Association. Existing knowledge, the most recent scientific discoveries, and the latest advances in diagnosing, treating, and controlling heart diseases are brought to the medical profession

by means of postgraduate courses, scientific meetings, symposia and by the presentation of scientific papers in the annual "Heart Number" of THE JOURNAL of the Michigan State Medical Society.

Through the judicious use of all communication media, a wholesome, effective and well-rounded information program, based on sound educational principles, has been developed and expanded since its inauguration in January, 1950. Those who direct these media have co-operated fully in making their services available so that this program has been brought to the people of Michigan on a most economical basis.

Rheumatic Fever Control

The Michigan Heart Association has designated more than \$23,000 for the financial support of the Rheumatic Fever Control Program of the Michigan State Medical Society. The program has as its ultimate objective the reduction of rheumatic fever and rheumatic heart disease in Michigan to a practical minimum.

A brief look at medical statistics shows the importance and need for continued support of this program which is so vital and essential to the good health of the children of Michigan. Rheumatic fever, commonly referred to as childhoods greatest enemy, is responsible for more deaths in the school age group than polio, whooping cough, diphtheria, measles, and meningitis combined. Further analysis of statistics reveals that rheumatic fever, including rheumatic heart disease, (1) ranks with tuberculosis as a great disabling, chronic disease; (2) except for accidents, is the most common cause of death among school children; (3) is the second most common cause of death by disease in the twenty to twenty-four age group; and (4) causes much of the heart disease in later life.

Since its inception, this program has increased from an original pilot control center to thirty Rheumatic Fever Diagnostic and Consultation Centers located in fifteen well-defined areas throughout the State where difficult cases can be accurately diagnosed and treatment recommended to the referring Doctor of Medicine. Thus, the Centers, established on a voluntary basis, place the most modern medical diagnostic service within the reach of every child or cardiac in Michigan, provide a consultation service to the general practitioner, and serve as a center for authentic information on the subject of rheumatic heart disease.

The Rheumatic Fever Program, originated and developed by the Michigan State Medical Society, has been recognized throughout the United States as one of the most effective means yet devised for directing maximum force against this dread disease.

Occupational Cardiology

The Occupational Cardiology Program is a two-fold project under the direct supervision of John G. Bielawski, M.D., Detroit, involving (1) a study of the problems of heart disease in industry and (2) the development of the Cardiac Housewife Program.

The industrial cardiology phase of the project is concerned with the establishment of proper methods of discovery of heart disease in the individual when first entering employment. Also under study are methods of determining the working capacity of those persons afflicted with heart disease and the proper selective job placement of these individuals in work suitable to their physical capacity. Although this project is in the study or research stage at present, it is an important step forward in the Michigan Heart Association program being developed to increase employment opportunities for individuals with heart disease.

The Cardiac Housewife Program, which constitutes the second important phase of this project, has been developed to show the homemaker, whose work capacity is limited by heart disease, how to conserve her time and energy in the performance of her daily household tasks. Time and energy conservation means a decrease in the strain placed on the heart by reducing the physical effort expended to a minimum through more efficient housekeeping methods.

The initial study on the program was conducted by Mrs. Frances G. Sanderson, Professor of the Home Economics Department at Wayne University in Detroit. From these studies, a complete course of instruction was developed which is designed to fill the doctor's prescription of "take it easy" by showing the homemaker with a cardiac disorder how to save as much as 75 per cent of her walking, 75 per cent of her movements and 60 per cent of her reaching while performing her daily household tasks. Classes in work-simplification techniques for women cardiac patients have been offered by the Michigan Heart Association at Wayne University for the past several months.

Early in 1951, the Michigan Heart Association

made a grant of funds to the School of Home Economics at Michigan State College to develop a similar program for women cardiac patients throughout the entire State of Michigan. Mrs. Ruth C. Kettunen, of the College Home Management Staff, was appointed to conduct this new phase of the program. Working through the Home Economics Extension Service of the College, classes in work-simplification have already been organized by the Michigan Heart Association in several counties of the State. These include Ingham, Berrien, Kent, Genesee, Isabella, Grand Traverse, Benzie, and Leelanau Counties. The program is continuing to expand and eventually will be made available to every community in the State.

A sum of \$12,500 has been allocated to the Occupational Cardiology Program, including grants of funds to Michigan State College and Wayne University.

Michigan Health Council

In addition to the far-reaching programs delineated above, the Michigan Heart Association also provided financial support to the Michigan Health Council. The Council's primary function is to promote and encourage the development on a community level, health projects of all Michigan organizations which have a major interest in health. During the past fiscal year, the Michigan Heart Association assigned \$1,000 to this important work which is being effectively carried out through voluntary and co-operative action by community health councils in Michigan.



MEMORIAL CONTRIBUTIONS

All funds used by the Michigan Heart Association are obtained from your contributions to United campaigns in Michigan. However, exception has been made so that contributions in memory of the deceased may be made directly to the Michigan Heart Association Memorial Fund.

Blood Lipids and Human Arteriosclerosis

By Harry E. Ungerleider, M.D., and
Richard Gubner, M.D.

New York, New York

STATED REALISTICALLY, arteriosclerosis is a pathological and not a clinical diagnosis. Procedures such as the electrocardiogram and tests of the peripheral circulation indicate only that organ function is impaired associated with a reduction in blood flow; they do not actually demonstrate the presence of arteriosclerosis. A direct clinical demonstration of arteriosclerosis of the major vessels of the atherosclerotic type can be made only in advanced stages, when calcification, which is such a frequent concomitant of atheromatous deposits, has occurred. It has long been known to pathologists that arteriosclerosis of the atherosclerotic type is most prevalent and most marked in the abdominal aorta and iliac arteries.

Recently we have completed an extensive study in our laboratory concerned with the feasibility and utility of the demonstration of calcification of the abdominal aorta and iliac vessels by roentgenologic methods.⁴⁰ It may be of interest to review the findings briefly in relation to other signs of arteriosclerosis, and certain features in their relationships to the development of arteriosclerosis such as age, obesity, blood cholesterol levels, diabetes and hypertension. Table I indicates the frequency of various signs of arteriosclerosis in 320 consecutive, unselected insurance applicants who were studied in the Diagnostic Laboratory at the Home Office of the Equitable Life Assurance Society.

Calcification of the abdominal aorta was present in seventy-seven cases, two and half times more frequent than any other sign of arteriosclerosis. Definitely abnormal electrocardiograms were present in thirty subjects, calcified iliac vessels of the atherosclerotic type in twenty cases, calcification of the aortic knob in fifteen cases, and a reversal of pulsation in the kymogram in eight cases. It is seen also in this table that in the majority of cases

TABLE I. SIGNS OF ARTERIOSCLEROSIS (320 CASES)

	Total	Alone	In Combination
Abdominal Aorta	77	40	37
Iliac Arteries	20	4	16
Aortic Knob	15	7	8
Electrocardiogram	30	12	18
Kymogram	8	5	3
Medial Sclerosis	32	11	21
Wide Aortic Arch	30	9	21

abnormal electrocardiograms and calcification of the iliac vessels and of the aortic knob occurred most frequently in association with other signs of arteriosclerosis, and were less commonly present as isolated findings. The medial type of arteriosclerosis as seen in the iliac and femoral vessels was observed in thirty-two cases, and tortuosity of the aortic arch in thirty cases. These, too, occurred more commonly in association with other signs of arteriosclerosis.

Figure 1 indicates the age distribution of the 320 subjects studied and the incidence of arteriosclerosis in each age group. Medial sclerosis occurred more frequently than indicated in this graph. Where it occurred in association with atherosclerosis, the case was included in the atherosclerotic group. The cases comprising the groups with atherosclerosis included all subjects with one or more signs of atherosclerotic arteriosclerosis mentioned above. The increase in incidence of arteriosclerosis with advancing age is clearly evident in this graph. Arteriosclerosis was found in fully half of subjects between the ages of fifty-one and fifty-five and was present in 75 per cent of cases above the age of fifty-five. A further analysis of the cases observed is shown in Figure 2 where the incidence of arteriosclerosis in various age groups is analyzed in three groups: (1) those with slight elevation of the blood pressure, and it should be emphasized that the blood pressure was within insurable limits in all subjects (fifty-three cases), (2) subjects with glycosuria (eighty-two cases), (3) subjects studied for miscellaneous reasons such as amount of insurance applied for, extrasystoles and various other borderline findings (185 cases). It is seen in this graph, as is well known, that both hypertension and diabetes accentuate the development of arteriosclerosis. All nine cases with glycosuria between the ages of fifty-six and sixty showed evidence of arteriosclerosis, and all seven subjects with elevated blood pressure in this age group similarly showed evidence of arteriosclerosis, compared to an incidence of eleven among twenty total cases in the same age group in individuals

Read at the Second Annual Heart Day of The Michigan Heart Association, Detroit, March 17, 1951.

Dr. Ungerleider is Director of Medical Research, Equitable Life Assurance Society of the United States. Dr. Gubner is Assistant Director.

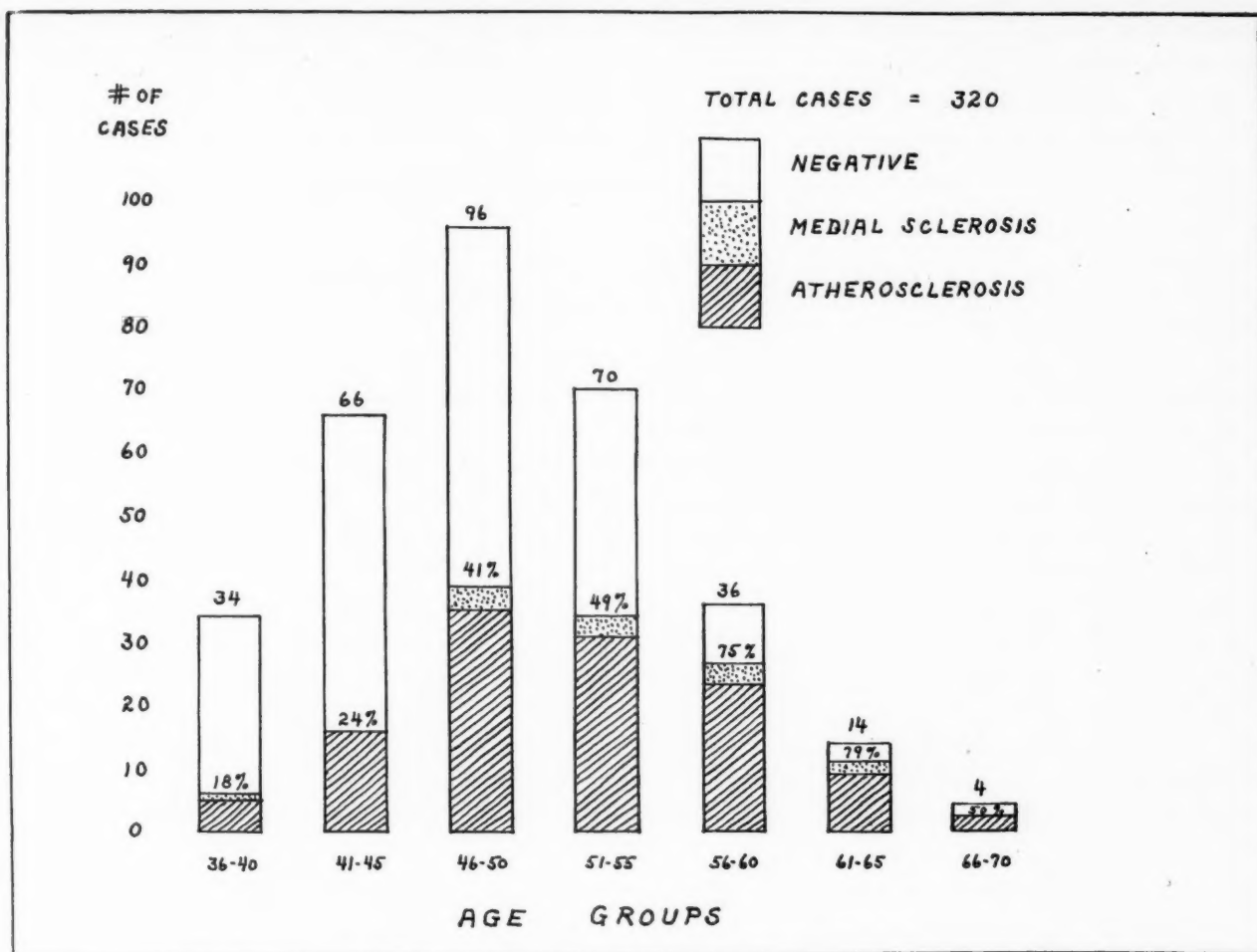


Fig. 1.

who had neither high blood pressure nor glycosuria.

The frequency with which a diagnosis of arteriosclerosis can be made clinically, as indicated by this study, is of interest, but the findings that the frequency of arteriosclerosis increases with age, with hypertension, and with diabetes, are scarcely novel or unexpected. Two other observations, however, revealed by study of the data, are of some interest. Exact height and weight were determined in all subjects, permitting an analysis of the relationship of body build to arteriosclerosis. This analysis was confined to subjects under the age of fifty-five, and to those who did not have either elevated blood pressure or glycosuria. This was done to exclude the factors which are known to contribute to the development of arteriosclerosis, namely, age, elevated blood pressure, and diabetes. Of forty-one cases with atherosclerosis thus studied, the average body build was 9.3 per cent overweight. Among ninety-four cases of similar type with no evidence of atherosclerosis, the average

body build was 7.8 per cent overweight. The difference is so slight as to appear insignificant, and lays open to doubt the widely held view that obesity of itself predisposes to the development of arteriosclerosis. It may well be that whatever relationship obesity bears to arteriosclerosis is an indirect and remote one, mediated by the greater incidence of hypertension and diabetes in obese individuals.

A further observation of interest has been an analysis of the relationship of blood cholesterol to arteriosclerosis. Determination of blood cholesterol was carried out in fifty-three subjects with glycosuria. Table III illustrates the incidence of arteriosclerosis according to the level of blood cholesterol. Even though the number of cases is small, one finding is striking. A conspicuous absence of arteriosclerosis is evident in subjects with very low levels of blood cholesterol, i.e., under 150 mg. Above this low level of cholesterol the incidence of arteriosclerosis is fairly similar regardless of the level of cholesterol. These findings are con-

firmatory of the study we reported in 1949 before the American Heart Association.

A very substantial body of experimental and clinical evidence has accumulated during the past

Cholesterol is a universal constituent of body tissues. Whether it be metabolically active or, as appears more probable, is a template of colloidal chemical reactions, is not as yet known. Cho-

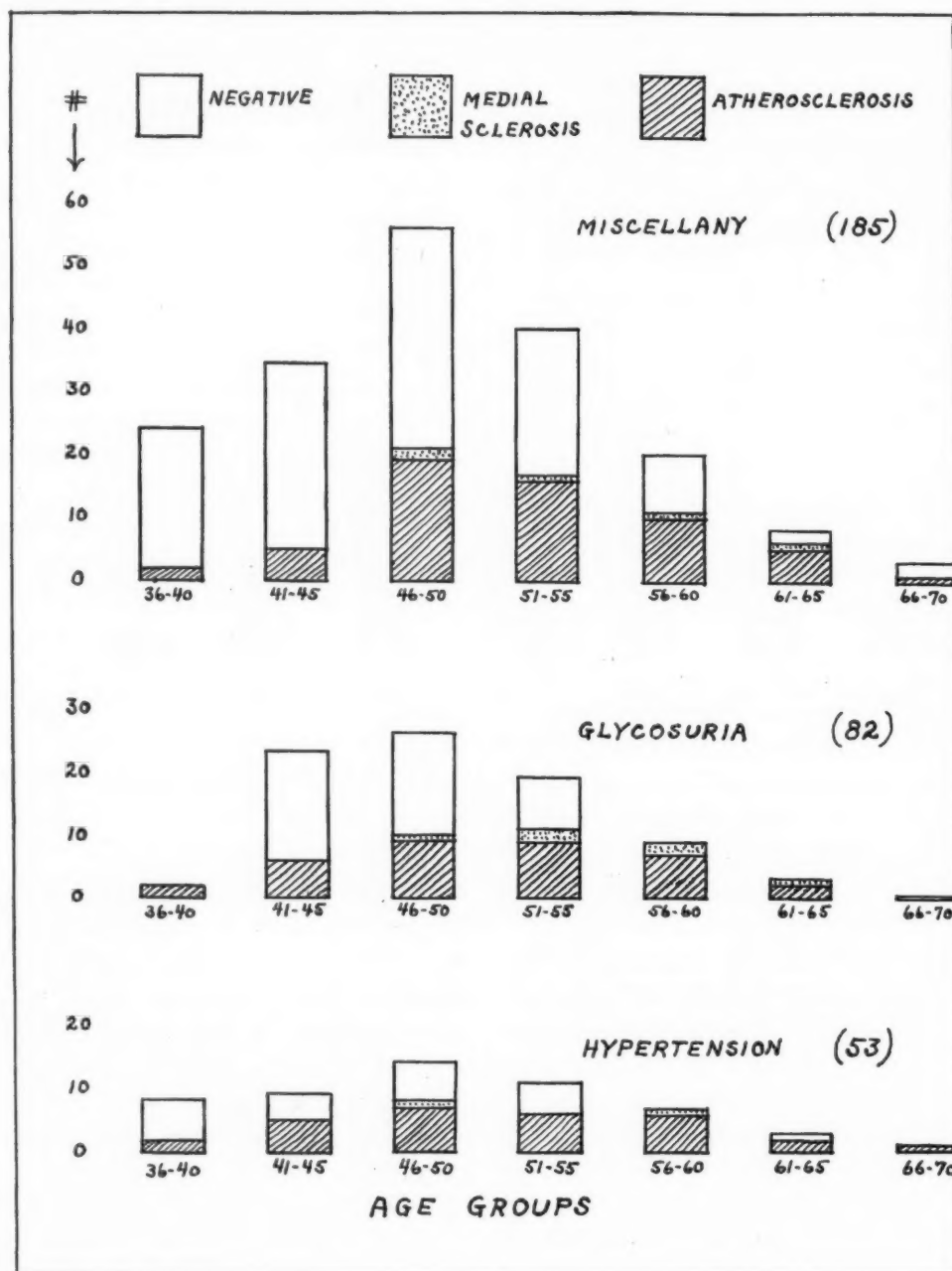


Fig. 2.

few decades incriminating cholesterol in the genesis of arteriosclerosis. It is our purpose here to survey the role of cholesterol and other lipids in the development of arteriosclerosis. It would appear appropriate first to review some of the physiological aspects of cholesterol metabolism since it is from this vantage point that the pathological physiological changes which occur in arteriosclerosis can best be understood.

Cholesterol is a precursor of cholic acid,¹⁴ of steroid hormones such as pregnandiol,¹¹ and a biological precursor of other steroids such as vitamin D.⁷⁷ The utilization of cholesterol in the synthesis of steroid hormones is particularly evident in the adrenal glands which normally contain large amounts of cholesterol. Rapid depletion of adrenal cholesterol occurs under conditions stimulating activity of the adrenal cortex, and in fact, assay of

BLOOD LIPIDS AND HUMAN ARTERIOSCLEROSIS—UNGERLEIDER

TABLE II. OVERWEIGHT AND ARTERIOSCLEROSIS

	Number Cases	Per Cent Overweight
Atherosclerosis	41	9.3
No Atherosclerosis	94	7.8

(All subjects under age 55, normal blood pressure, no glycosuria)

adrenal cholesterol serves as a test of adrenal cortical function. In the serum as suggested by Bloor,¹⁵ and others, cholesterol, which exists in close relationship to phospholipids and serum proteins, performs the important function together with these constituents, of preserving colloidal equilibrium.^{5,15,26,44} The hydrophobic, insoluble cholesterol owes its high concentration in the serum of man to agents which allow it to be carried in colloidal dispersion. Phospholipids as suggested by Bloor¹⁵ and more recently by Ahrens and Kunkel⁵ appear to be significant in this regard, for serum phospholipids which are surface active compounds with strong polar groups solubilize the hydrophobic cholesterol and neutral fats.

Cholesterol in the body is derived from two sources, endogenous synthesis and that ingested in the diet. As indicated by studies with isotopically labeled compounds, cholesterol synthesis involves the condensation of numerous small-sized molecules of which acetic acid is the most efficient precursor.¹³ Available evidence suggests that the majority, if not all, carbon atoms of cholesterol are contributed by acetic acid. Synthesis of cholesterol occurs primarily in the liver.

In a recent review of the intermediary metabolism of cholesterol, Bloch has indicated that he has been unable to demonstrate the occurrence of cholesterol synthesis in testes, spleen, intestines, kidney, and the heart, but remarked that it would be "unwarranted to state at this time that cholesterol synthesis is confined to the liver."¹² Others³⁹ have suggested that synthesis of cholesterol may occur in other tissues such as the intestinal mucosa and the skin, as well as the liver. There is some evidence of a reciprocal relationship between exogenous supply and endogenous synthesis of cholesterol, for when cholesterol is fed, the rate of synthesis is decreased.⁸²

Destruction of cholesterol in the body does not ordinarily occur to any significant degree and is probably not a major factor in regulating blood cholesterol. Cholestanol, the hydrogenation product of cholesterol, is found in small concentration

TABLE III. CHOLESTEROL AND ARTERIOSCLEROSIS

	Under 150	150-199	200-249	250-299	Over 300
Number Cases	6	23	21	6	7
Number with Arteriosclerosis	0	13	8	3	4
Per cent with Arteriosclerosis	0	56.5	38	50	57
Average Age	47.2	48.7	48.4	51.2	49.0

in the blood serum:⁷⁵ cholestenone, the unsaturated ketone which is the initial stage in degradation due to coprosterol, has been isolated in body tissues.⁷²

Approximately 0.3 gm of cholesterol and its degradation product are lost through the intestines daily. The major part of sterol excretion takes place directly into the intestine, particularly the large bowel.¹⁵ The following mechanism has been suggested by Gubner and Ungerleider.⁴¹ Cholesterol is not stored in the body as is fat, fatty tissues containing little or no cholesterol. However, a considerable repository of cholesterol is present in the lymphocytes. Serum cholesterol varies inversely with the total leukocyte count in infection. The intestines are the main pathway for the disposal of lymphocytes and this may well provide an important mechanism for excretion of sterols.

The degradation of cholesterol proceeds by oxidation to the ketone cholestenone, followed by reduction to coprostanone and further reduction to coprosterol.⁷ The primary oxidation of steroids to the keto form appears to occur in the cecum through the action of coliform microorganisms.^{45,47,74,75} The sequence of chemical changes in cholesterol degradation may be represented in the following manner: cholesterol to cholestenone to coprostanone to coprosterol. Coprostanone and coprosterol cannot be absorbed from the intestines and once formed are excreted. Cholestenone, however, can be reconverted to cholesterol. A certain portion of cholesterol is degraded by reduction to dihydrocholesterol which, like coprosterol, is not absorbed and is excreted in the feces.

The presence of cholesterol in the intestines is not solely an excretory event, for it plays an important role in fat absorption and transport. In this respect cholesterol performs some of the same functions as bile acids and goes through the same cycle of the excretion via the biliary tract, resorption in the intestines, and circulation in the blood back to the liver. The daily biliary excretion of cholesterol is at least 0.5 Gm. and of bile acids 2 Gm. Cholesterol in the bile as well as that in the

diet is in the free (non-esterified) form.⁸⁹ The daily cholesterol intake in the mixed diet of the adult varies from 200 to 360 mg.; on a low fat diet it ranges from 39 to 109 mg.; whereas fat rich diets may contain up to 1400 mg. of cholesterol.²⁰ In the intestines cholesterol serves as a major vehicle for the absorption of fatty acids, particularly the highly important unsaturated fatty acids. The mechanism whereby this occurs may be briefly described as follows: Fatty acids which are liberated by the action of pancreatic lipase on neutral fats are esterified with cholesterol by pancreatic cholesterol esterase, which is activated markedly by bile acids. The esterified cholesterol is transported into the epithelial cells of the intestines, unesterified cholesterol itself being absorbed poorly if at all. To be absorbed, therefore, cholesterol requires the presence of fat, pancreatic enzymes and bile salt. If any of these be lacking, cholesterol absorption is greatly impaired. Thus, in animals on a fat free diet, cholesterol which is administered can be recovered quantitatively in the feces.¹⁹

Both in absorption and in transport in the blood stream there appears to be a remarkably constant concentration and division of the various lipid fractions in any individual, suggesting a dynamic interdependence and relationship. Particularly is this true for the ratios cholesterol to cholesterol esters, and cholesterol to phospholipids. Neutral fat, which usually comprises the smallest fraction of the fatty acids of the plasma, is somewhat more independent and variable. The clinical significance of the close interrelation between the various lipid fractions of plasma lies in the realization that blood cholesterol concentration must not be considered alone but in terms of lipid metabolism as a whole.

The reason for the constancy of the partition of fatty acids between cholesterol esters and phospholipid lies in the regulatory activity of the liver in transferring fatty acids from cholesterol to phosphatides. In the liver, cholesterol esters which are formed in the intestine as a vehicle for fatty acid absorption and transport are transferred to choline phosphatides, i.e., lecithin, in preparation for further stages of fat metabolism. The turnover rate of liver phospholipid is accelerated by choline and its precursors,¹⁸ although lately this has been questioned.²¹ In subjects with liver disease,²² and in choline deficiency and in hypothyroidism¹⁵ the transfer of fatty acids from cholesterol esters is impaired. Lipotropic agents stimulate phospho-

lipid turnover. The mechanism of action of choline and thyroid hormone are interrelated for choline must be present for thyroxine to exert lipotropic action.³² In fatty livers produced by choline deficiency a great accumulation of cholesterol esters occurs in the liver. Conversely, lipotropic agents such as lecithin, choline, methionine, inositol, betaine and thyroid hormones speed up the removal of fatty acids from cholesterol, allowing the liver to pass free cholesterol into the bile.

The range of variation of the serum cholesterol in normal individuals is very great, and has been the subject of several recent studies.^{35,54,55} In the same individual, however, the range of variation is not ordinarily considerable. The ratio of free cholesterol to total cholesterol in normal adults lies at a mean of 0.28 with a minimum of 0.24 and maximum 0.32.^{70,78}

Numerous factors have a bearing on the level of the serum cholesterol. No significant differences exist between the determinations carried out in the basal state and the non-basal state.⁵⁴ Significant racial differences exist, but whether this is due to genetic factors or differences in diet or other environmental considerations is not clearly understood.

While it has been known since 1893¹⁶ that the lipid disturbance xanthoma tuberosum has a strong hereditary basis, it is only recently that it has been recognized that this is but one manifestation of familial hypercholesterolemia, which is a very common variant of cholesterol metabolism inherited as an incomplete dominant trait.^{2,6,16,17,86,88}

There is a tendency toward higher values for serum cholesterol in females than in males which is most pronounced in adolescence and early adult life,⁵⁵ although in another study no significant sex difference was observed.⁵⁴ It is well known that the serum cholesterol rises in pregnancy; this increment of cholesterol amounts to from 50 to 100 per cent of the normal non-pregnant concentration.⁷¹ The level of serum cholesterol rises significantly with age.^{54,55} At the age of 20 in normal males the mean value is 173.7 mg. per cent with a standard deviation of 32.0. At age 40 the mean is 219.4 mg. per cent with a standard deviation of 38.6. At age 60 the mean is 253.3 mg. per cent with a standard deviation of 33.6. 90 per cent of the normal male population fall below a level of 226 at age 20, 284 at age 40, and 309 at age 60. 98 per cent fall below 248 at age 20, 312 at age 40 and 343 at age 60.⁵⁴

Body constitution as expressed by the anthropometric index bears a significant relation to the level of blood cholesterol.^{37,55} Higher values are present in pyknic (hypersthenic) than in leptosomatic (asthenic) subjects, or expressed in terms of the Sheldon system of somatotyping, cholesterol is highest in endomorphs and lowest in ectomorphs. Although physique as expressed in constitutional types is related to serum cholesterol, weight as such has no bearing on the level of cholesterol and cholesterol levels are no higher in obese individuals than in subjects of normal weight.³⁷

Variations in diet, unless extreme, have no influence on the level of blood cholesterol.^{14,53,87} In diets of choice, the absolute amount of carbohydrate, fat, protein and cholesterol bear no demonstrable relation to the level of total serum cholesterol. Complete elimination of fats and cholesterol from the diet as in the rice-fruit diet employed in hypertension, produces a significant fall in blood cholesterol.^{53,85} Similar marked reduction in serum cholesterol concentration has been attained by fat-free diets consisting entirely of protein hydrolysate and dextrimaltose.⁶¹ Such diets cannot be maintained comfortably for any considerable period, and upon resumption of a normal diet the serum cholesterol rapidly returns to previous levels. The fall in cholesterol on a lipid-free diet is not due to dietary elimination of cholesterol but rather to elimination of fats.⁴¹ Little or no effect on the blood cholesterol is observed with marked variations in the amount of cholesterol in the diet, but on the other hand, a quantitative relationship exists between the cholesterol content of the body and the amount of fat fed on the constant sterol-poor diet.³⁰ The reason for this is that absorption of cholesterol occurs only in the presence of fatty acids and on a fat-free diet cholesterol which is ingested or is excreted into the intestines directly or via the biliary tract is quantitatively excreted in the feces.⁴¹

The level of serum cholesterol is influenced by many metabolic factors and is altered in numerous disease states which are too well known to require comment. Situations attended by changes in the serum cholesterol are discussed in detail in treatises such as that of Peters and Van Slyke.⁷¹ Best known perhaps are the elevation of serum cholesterol in uncontrolled diabetes mellitus, obstructive jaundice, myxedema, and nephritis, particularly in the nephrotic stage. In severe liver disease the level of serum cholesterol, particularly the ester fraction,

is reduced. A lowered level of serum cholesterol is observed also in hyperthyroidism and in many febrile diseases as well as chronic debilitating states.

Interest in cholesterol metabolism has centered on its role in arteriosclerosis since the demonstration by Anitschkow that arteriosclerosis can be produced experimentally by the feeding of cholesterol.⁸ Cholesterol fulfils Koch's postulates in arteriosclerosis but, as recently stated by Dock,²⁷ while we know its etiology, we have only a vague idea as to the pathogenesis of arteriosclerosis. Some authoritative observers such as Tannhauser⁸³ still hold that "arteriosclerosis (atherosclerosis) has no primary etiological connection with cholesterol metabolism. It is a disorder affecting the elastic structure and the ground substance of the vascular walls with secondary cholesterol imbibition and precipitation of cholesterol in the altered tissues." A large mass of evidence implicating cholesterol in the genesis of arteriosclerosis has accumulated during the past few decades, which has recently been reviewed by Gubner and Ungerleider.⁴¹ Thus there may be mentioned the experimental production of atherosclerosis in the rabbit, guinea pig, chicks and dogs by sustained elevation of blood cholesterol. Clinically, it is well known that there is an increased incidence of atherosclerosis in conditions associated with significant hypercholesterolemia, such as essential xanthomatosis and other lipoidoses, diabetes mellitus, myxedema and nephritis. Several investigators have reported a high frequency of hypercholesterolemia in subjects with coronary artery disease.^{25,58,68,80,84}

The objection to the etiological role of cholesterol in arteriosclerosis which is predicated on the fact that arteriosclerosis occurs commonly in the absence of hypercholesterolemia, is vitiated by the recent observation that the so-called "normal" cholesterol is in reality a high cholesterol, and that the cholesterol level of the average American population is of such an order as to predispose to the development of arteriosclerosis. In this study⁴¹ as well as in a more recent report,⁴⁰ it was found that, while the incidence of arteriosclerosis is approximately the same in subjects with average levels of blood cholesterol as in those with slight hypercholesterolemia, low levels of serum cholesterol confer a significant protection against the development of arteriosclerosis. In individuals with a level of serum cholesterol below 150 mg. per cent, there is a conspicuous absence of arteriosclerosis.⁴⁰

Recent studies have emphasized that the role of

cholesterol in arteriosclerosis cannot be viewed as an isolated entity but must be considered in its relation to other serum lipids. "If cholesterol is the actual culprit in arteriosclerosis, fat is an active accomplice. Not only are cholesterol and fat found together in food sources, but they are integrally associated in intestinal absorption, in transport in the blood stream, and in early atheromatous deposits."⁴¹

Moreton has recently proposed that differences in fat tolerance which are unrelated to the level of serum cholesterol, may be responsible for the predisposition to arteriosclerosis.^{62,63,64} Following the ingestion of fats, fat particles may be observed in the blood serum microscopically and may be quantitatively counted.³³ These fat particles which are called chylomicrons are macromolecular bodies which are composed chiefly of neutral fats but also contain cholesterol. A variety of macromolecular colloids, as Hueper⁴⁶ has shown, penetrates the endothelial cells of the arterial intima to form foam cells, which constitute one of the initial changes in the development of atheromata. It is believed that these foam cells are carried into the arterial subintima where they degenerate leaving a lipid residue which constitutes the lesion of arteriosclerosis. Moreton, employing a nephelometric method for the quantitative study of the chylomicronemia following a standard test fat meal, has presented evidence that chylomicronemia varies considerably in different individuals, and has suggested that those subjects with high and sustained chylomicron counts following ingestion of fats may be predisposed to the development of arteriosclerosis. Becker and his co-workers¹⁰ have found that in older age groups who are predisposed to arteriosclerosis, as contrasted with younger individuals, following the ingestion of fat there is a consistently and considerably higher as well as much more sustained degree of chylomicronemia. Zinn and Griffith have found that the ratio of large fat serum droplets (chylomicrons) to total fat serum droplets (lipomicrons) is much higher in subjects with diabetes and atherosclerosis than it is in normal individuals.⁹⁰ Chylomicronemia can be greatly reduced by reducing the fat intake and by potent lipases such as pancreatic lipase and also by surface active detergents.^{10,33}

It has already been mentioned that the hydrophobic, insoluble cholesterol owes its high concentration in the serum of man to agents which allow it to be carried in colloidal dispersion. This is made possible by phospholipids and the serum proteins

which form lipoprotein complexes. It has been known for some time that the solubility of cholesterol in the serum, which is determined by phospholipid and lipoprotein complexes, varies greatly with a striking decrease in older individuals beyond the sixth decade, particularly in subjects with arteriosclerosis.^{28,29,60,76} Recently there has been an awakened interest in the solubilizing role of phospholipid and protein on cholesterol as revealed by studies of the cholesterol-phospholipid ratio on the one hand, and ultracentrifuge study of lipoprotein complexes on the other.

Ahrens and Kunkel, and several other investigators have emphasized the importance of serum phospholipids as stabilizers of the serum lipid emulsion.^{3,4,5,23,24,35,36,37,48,49,50,56,67} It appears from these studies that elevation of serum cholesterol *per se* is of less importance in the pathogenesis of arteriosclerosis than abnormal ratios of cholesterol to phospholipid. In subjects with arteriosclerosis the ratio of cholesterol to phospholipid is significantly decreased. Corroboration of the protective role of agents which solubilize cholesterol, such as phospholipid (lecithin), is afforded by the experimental observation that other solubilizing agents which are not native to the serum, such as the detergent Tween 80, when injected intravenously, retard the development of atherosclerosis in animals on cholesterol feeding, despite very high levels of the serum lipids.^{49,69} It is not known precisely in what manner the phospholipid lecithin protects against the deposition of cholesterol in the arterial wall which constitutes the basic lesion of arteriosclerosis. It has been suggested⁴¹ that cholesterol as well as other serum lipids enter the vessel wall by penetration together with protein and phospholipids, and that tissue utilization of hydrophilic colloids such as protein and lecithin which hold the hydrophobic cholesterol in colloidal dispersion might lead to precipitation of cholesterol in the arterial wall. Such precipitation may be more readily effected when the ratio of phospholipid-cholesterol is reduced as appears to be the case in subjects with arteriosclerosis.

Considerable interest has centered recently on Gofman's observations of alterations in serum lipid and lipoprotein molecules as studied in the ultracentrifuge.^{38,59} Gofman has found that the transport of cholesterol and other lipids of serum is almost entirely in the form of very large molecular complexes of these lipids with variable amounts of protein. The exact components present in the

blood of a particular individual may be quantitatively described both as to character and concentration by ultracentrifugal flotation of these components in the analytic ultracentrifuge. Four chief classes of molecules have been found in these studies.

A. Species which migrate with Sf values greater than 75 Sf units. These include the chylomicrons and aggregates of much smaller dimensions. The concentration is increased following fat-containing meals and represents part of the alimentary lipemia.

B. Species which migrate with Sf values between 30 to 70 Sf units. This constitutes the major fraction of alimentary lipemia and contains certain cholesterol bearing molecule components.

C. Species which migrate with rates between 10 and 20 Sf units. The molecular weight of these components is in the neighborhood of 3,000,000 and they contain approximately 30 per cent of cholesterol by weight.

D. Species which migrate with Sf rates between 3 to 8 Sf units. These molecules are cholesterol, phospholipid and protein-containing substances.

The species Sf 10 to 20 do not represent any part of the acute alimentary lipemia and are not closely correlated with the total cholesterol serum level, although in general they are low in individuals with very low levels of serum cholesterol and high when hypercholesterolemia of considerable degree is present. These molecules are present with a much higher frequency and at higher concentrations in subjects with known arteriosclerosis and in diseases associated with a predisposition to arteriosclerosis (diabetes, nephrotic syndrome, hypothyroidism, hypertension).^{38,59} It is believed by Gofman on the basis of these observations that they are associated in some manner with the development of arteriosclerosis.

It is evident from the foregoing that cholesterol of itself does not constitute the whole story in arteriosclerosis, and that lipid metabolism as a whole must be considered. Further clarification is necessary of the interrelations between serum cholesterol, chylomicronemia, phospholipid-cholesterol ratios, and lipoprotein complexes of Sf 10 to 20 category. It has been established that serum cholesterol levels do not bear any close relationship to chylomicronemia, cholesterol-phospholipid ratios, or lipoprotein complexes of Sf 10 to 20 type.

Neither is there any correlation between chylomicrons and Sf 10 to 20 lipoprotein molecules. Gofman³⁸ has found no correlation between chylomicronemia and the presence of atherosclerosis in humans as studied in the ultracentrifuge.

In view of the uncertain pathogenetic roles of the various lipid fractions and ratios in the serum, the recommendation of specific measures based on effects on these various lipid deviations cannot, at the present time, be considered as of proven or definite value in the control or prophylaxis of arteriosclerosis. Drastic dietary restriction of fats, as already mentioned, reduces the level of serum cholesterol but lesser degrees of fat restriction are without value in this respect. Fat restriction decreases alimentary chylomicronemia,⁶⁴ improves the phospholipid-cholesterol ratio,⁸⁵ and significantly decreases the concentration of Sf 10 to 20 lipoprotein molecules.³⁸ Curtailment of fat intake in the diet therefore appears warranted on the basis of its beneficial effect on all of the several indices of disturbed lipid metabolism, which are presently considered to bear on the pathogenesis of arteriosclerosis.

Considerable exploitation has been made of reports of the effects of various lipotropic agents on cholesterol and lipid metabolism.^{1,31,42,43,52,57,65,66,81} These lipotropic agents include lecithin, choline, methionine, betaine, inositol, and thyroid hormone. Although these agents are effective in preventing experimental fatty infiltration of the liver, earlier enthusiastic reports of their effects in reducing serum cholesterol and in preventing experimental arteriosclerosis have been greatly tempered by more recent investigations. The effects of these agents in reducing blood cholesterol are relatively slight. They fall far short of accomplishing a marked reduction of blood cholesterol to levels of 150 mg. per cent such as are necessary to confer protection against the development of arteriosclerosis.⁴⁰

The lowering effect of lipotropic factors on blood cholesterol is temporary and serum cholesterol tends to rise after an initial lowering despite continued administration. Recent investigations,^{9,24,79} have failed to confirm earlier reports that lipotropic agents inhibit the development of experimental arteriosclerosis. These more recent studies include investigations in the rabbit, the dog, and the chick. In the chick, choline and inositol were actually found to aggravate the development of atherosclerosis on cholesterol feedings.⁷⁹ Fur-

ther study is necessary to establish the effect of lipotropic agents on other indices of disturbed lipid metabolism in arteriosclerosis, apart from the total serum cholesterol concentration.

The effect of lipotropic agents is to accomplish the removal of fatty acid esters from cholesterol in the liver, allowing free cholesterol to be excreted in the bile. However, the biliary cholesterol is promptly reabsorbed in the intestines back into the circulation, unless cholesterol absorption is prevented by such measures as extreme fat restriction.⁴¹ It is evident, therefore, that whatever value lipotropic factors may have can be exerted solely as an adjunct to marked dietary restriction of fats.

It is not to be inferred from this extended comment that blood lipids constitute the whole story in the pathogenesis of arteriosclerosis. Arteriosclerosis is, after all, a disease of the arteries and it is here one must look for the pathological-physiological changes which constitute vulnerability to the development of atherosclerosis. That local factors in the arteries are important in the pathogenesis of arteriosclerosis is self-evident from the fact that arteriosclerosis is not an even and diffuse process but exhibits definite zones of predilection for certain areas and vessels.

The artery, no less than other specialized tissues, is an organ with a metabolically active parenchyma (the muscle cells), supporting tissue (fibroblasts and elastic and collagen fibers) and an intercellular medium through which nutrition is brought and waste products are removed. It is the unique arrangement of the circulation through the intercellular medium of the artery which appears in large measure to provide the background for arteriosclerosis.

The same factors which determine the composition and circulation of the intercellular fluid in other tissues of the body operate in controlling fluid movement through the arteries. These include the vascular filtration pressure, composition of the blood, permeability of the endothelial membrane, physical state of the intercellular medium and barriers to fluid flow, venous and lymphatic removal of the intercellular fluid and adjuvant factors aiding movement and removal of components of the intercellular medium, such as gross movement of the part and phagocytic activity. The quantitative effect of these several factors differ greatly, however, in relation to their action in determining the intercellular composition and composition elsewhere in the body. We have re-

viewed these individual factors with respect to their bearing on the genesis of arteriosclerosis in other communications,⁴¹ and time does not permit us to give consideration to these factors in the present discussion.

There is, however, one important local factor in the vessel wall which is pertinent to the comment we have already made on the interrelationship of various lipid fractions and the role of hydrophilic colloids in preventing precipitation of the hydrophobic cholesterol. Cholesterol enters the arterial wall by penetration together with protein and phospholipid. The distribution of lipids in the arterial wall and in early atheromas is very similar to that in the blood, whereas in a more advanced stage of atheromatosis, there is a greatly increased proportion of cholesterol. Evidently, the hydrophilic colloids which hold the hydrophobic cholesterol in colloidal dispersion are either removed or utilized in the tissues and lead to precipitation of cholesterol in the arterial wall. As we have indicated in a recent communication,⁴⁰ enzymes are present in the aortic wall which break down phospholipids, such as acid phosphatase, which is particularly activated when circulation of nutrient tissue fluid through the arterial wall is impaired, resulting in lowered tissue pH. Here we have a clue to the local factor in the precipitation of cholesterol in the arterial wall, which constitutes the actual lesion of arteriosclerosis.

The presence of phosphatase in the arterial wall, described recently by Kirk and Praetorius, as suggested by these investigators, may also have an important bearing on the pathogenesis of arterial calcification, which is such a frequent concomitant of arteriosclerosis. The local breakdown of phosphatides not only leads to precipitation of cholesterol, as we have suggested, but also provides phosphate for the local precipitation of calcium phosphate and development of calcification in the artery.

Bibliography

1. Adlersberg, D., and Sobotka, H.: *J. Mt. Sinai Hosp.*, 9:955, 1943.
2. Adlersberg, D.; Parets, A. D., and Boas, E. P.: *J.A.M.A.*, 141:246, 1949.
3. Ahrens, E. H., Jr.: *Bull. N. Y. Acad. Med.*, 26:151, 1950.
4. Ahrens, E. H., Jr., and Kunkel, H. G.: *J. Clin. Inv.*, 28:1565, 1949.
5. Ahrens, E. H., Jr., and Kunkel, H. G.: *J. Exp. Med.*, 90:409, 1949.
6. Alvord, R. M.: *Arch. Int. Med.*, 84:1002, 1949.
7. Anchel, M., and Schoenheimer, R.: *J. Biol. Chem.*, 125:23, 1938.

8. Anitschkow, N., and Chalataw, S.: *Centralbl. f. allg. Path. u. path. Anat.*, 24:1, 1913.
9. Balatre, P., and Merlen, J. F.: *Proc. Ist. Int. Cong. of Cardiol.*, Paris, September, 1950.
10. Becker, G. H.; Meyer, J., and Necheles, H.: *Science*, 110:529, 1949.
11. Bloch, K.: *J. Biol. Chem.*, 157:661, 1945.
12. Bloch, K.: *Circ.*, 1:214, 1950.
13. Bloch, K., and Rittenberg, D.: *J. Biol. Chem.*, 145:625, 1942.
14. Bloch, K., Berg, B. N., and Rittenberg, D.: *J. Biol. Chem.*, 149:511, 1943.
15. Bloor, W. R.: *Biochemistry of the Fatty Acids*. New York: Reinhold Publishing Corp., 1943.
16. Boas, E. P., and Adlersberg, D.: *J. Mt. Sinai Hosp.*, 12:84, 1945.
17. Boas, E. P.; Parets, A. D., and Adlersberg, D.: *Am. Heart J.*, 35:611, 1948.
18. Boxer, G. E., and Stetten, De W. Jr.: *J. Biol. Chem.*, 153:617, 1944.
19. Cook, R. P.: *Biochem. J.*, 30:1630, 1936.
20. Cook, R. P.: *Nutrition Abstr. & Rev.*, 12:1, 1942.
21. Cornatzer, W. E., and Cayer, D.: *J. Clin. Inv.*, 29:534, 1950.
22. Cornatzer, W. E., and Cayer, D.: *J. Clin. Inv.*, 29:542, 1950.
23. Davidson, J. D.; Abell, L. L., and Kendall, F. E.: *Am. Heart J.*, 38:462, 1949.
24. Davidson, J. D.; Meyer, M., and Kendall, F. E.: *Circ.*, 2:471, 1950.
25. Davis, D.; Stern, B., and Lesnick, G.: *Ann. Int. Med.*, 11:354, 1937.
26. Degwitz, R.: *Klin. Wehnschr.*, 9:2336, 1930.
27. Dock, W.: *Bull. N. Y. Acad. Med.*, 26:182, 1950.
28. Eck, M., and Desbordes, J.: *Compt. rend. Soc. de Biol.*, 117:428, 1934.
29. Eck, M., and Desbordes, J.: *Compt. rend. Soc. de Biol.*, 118:498, 1935.
30. Eckstein, H. C.: *J. Biol. Chem.*, 125:99, 107, 1938.
31. Felch, W. C., and Dotti, L. B.: *Proc. Soc. Exp. Biol. & Med.*, 72:376, 1949.
32. Forbes, J. D.: *Endocrin.*, 35:126, 1944.
33. Frazer, A. C.: *Physiol. Rev.*, 20:561, 1940.
34. Gertler, M. M., and Garn, S. M.: *Science*, 112:14, 1950.
35. Gertler, M. M.; Garn, S. M., and Bland, E. F.: *Circ.*, 2:517, 1950.
36. Gertler, M. M.; Garn, S. M., and Lerman, J.: *Circ.*, 2:205, 1950.
37. Gertler, M.; Garn, S. M., and Sprague, H. B.: *Circ.*, 2:380, 1950.
38. Gofman, I. W.; Jones, H. B.; Lindgren, F. T.; Lyon, T. P.; Elliott, H. A., and Strisower, B. S.: *Circ.*, 2:161, 1950.
39. Gould, R. G.: *Circ.*, 2:467, 1950.
40. Gubner, R.: *Tr. Assoc. Life Ins. Med. Dir. of America*, 34:20, 1951.
41. Gubner, R., and Ungerleider, H. E.: *Am. J. Med.*, 6:60, 1949.
42. Herrmann, G. R.: *Texas State J. Med.*, 42:260, 1946.
43. Herrmann, G. R.: *Tr. A. Am. Physicians*, 60:160, 1947.
44. Hirsch, E. F., and Weinhouse, S.: *Physiol. Rev.*, 23:185, 1943.
45. Hoehn, W. M.; Schmidt, L. H., and Hughes, H. B.: *J. Biol. Chem.*, 152:59, 1944.
46. Hueper, W. C.: *Arch. Path.*, 39:117, 1945.
47. Hughes, H. B., and Schmidt, L. H.: *Proc. Soc. Exp. Biol. & Med.*, 51:162, 1942.
48. Jackson, R. S.; Wilkinson, C. F., Jr.; Hand, E. A.; Waldron, A. M., and Vogel, W. C.: *Circ.*, 2:472, 1950.
49. Kellner, A.; Correll, J. W., and Ladd, A. T.: *Fed. Proc.*, 8:359, 1949.
50. Kellner, A.; Correll, J. W., and Ladd, A. T.: *Am. Heart J.*, 38:460, 1949.
51. Kempner, W.: *Bull. N. Y. Acad. Med.*, 22:358, 1946.
52. Kesten, H. D., and Silbowitz, R.: *Proc. Soc. Exp. Biol. & Med.*, 49:71, 1942.
53. Keys, A.; Mickelsen, O.; Miller, E. V. O., and Chapman, C. B.: *Science*, 112:79, 1950.
54. Keys, A.; Mickelsen, O.; Miller, E. V. O.; Hayes, E. R., and Todd, R. L.: *J. Clin. Inv.*, 29:1347, 1950.
55. Kornerup, V.: *Arch. Int. Med.*, 85:398, 1950.
56. Ladd, A. T.; Kellner, A., and Correll, J. W.: *Fed. Proc.*, 8:360, 1949.
57. Leinwand, I., and Moore, D. H.: *Am. Heart J.*, 38:467, 1949.
58. Lerman, J., and White, P. D.: *J. Clin. Inv.*, 25:914, 1946.
59. Lewis, L. A., and Page, I. H.: *Circ.*, 2:466, 1950.
60. Loeper, M.; Lemarie, A., and Lesure, A.: *Compt. rend. Soc. de Biol.*, 98:101, 1928.
61. Mellinkoff, S. M.; Machella, T. E., and Reinhold, J. G.: *Am. J. Med. Sci.*, 220:203, 1950.
62. Moreton, J. R.: *Science*, 106:190, 1947.
63. Moreton, J. R.: *Science*, 107:371, 1948.
64. Moreton, J. R.: *J. Lab. & Clin. Med.*, 35:373, 1950.
65. Morrison, L. M.: *Geriatrics*, 4:236, 1949.
66. Morrison, L. M., and Wolfson, E.: *Circ.*, 2:479, 1950.
67. Morrison, L. M.; Gonzalez, P., and Wolfson, E.: *Circ.*, 2:472, 1950.
68. Morrison, L. M.; Hall, L., and Cheney, A. L.: *Am. J. Med. Sci.*, 216:32, 1948.
69. Payne, T. P. B., and Duff, G. L.: *Circ.*, 2:471, 1950.
70. Peters, J. P., and Man, E. B.: *J. Clin. Inv.*, 22:707, 1943.
71. Peters, J. P., and Van Slyke, D. D.: *Quantitative Clinical Chemistry*. Vol. 1. Interpretations. 2nd Edition, Williams & Wilkins, 1946.
72. Ruzicka, L., and Prelog, V.: *Helvet. chim. Acta*, 26:975, 2222, 1943.
73. Schmidt, L. H., and Hughes, H. B.: *J. Biol. Chem.*, 143:771, 1942.
74. Schmidt, L. H.; Hughes, H. B.; Green, M. H., and Cooper, E.: *J. Biol. Chem.*, 145:229, 1942.
75. Schoenheimer, R.: *Ztschr. f. klin. Med.*, 123:749, 1933.
76. Schonholzer, G.: *Helvet. med. Acta*, 6:692, 1939.
77. Scott, M., Glover, J., and Morton, R. A.: *Nature*, 163:530, 1949.
78. Sperry, W. M.: *J. Biol. Chem.*, 117:391, 1937.
79. Stamler, J.; Bolene, C.; Katz, L. N.; Harris, R.; Silber, E. N.; Miller, A. J., and Akman, L.: *Am. Heart J.*, 38:466, 1949.
80. Steiner, A., and Domanski, B.: *Arch. Int. Med.*, 71:397, 1943.
81. Steiner, A., and Domanski, B.: *Proc. Soc. Exp. Biol. and Med.*, 55:236, 1944.
82. Taylor, C. B., and Gould, R. G.: *Circ.*, 2:467, 1950.
83. Thannhauser, S. J.: *J. Mt. Sinai Hosp.*, 17:79, 1950.
84. Underdahl, L. O., and Smith, H. L.: *Proc. Staff Meet. Mayo Clin.*, 22:479, 1947.
85. Watkin, D. M.; Froeb, H. F.; Hatch, F. T., and Gutman, A. B.: *Am. J. Med.*, 9:428, 1950.
86. Wilkinson, C. F., Jr.: *Bull. N. Y. Acad. Med.*, 26:670, 1950.
87. Wilkinson, C. F., Jr.; Blecher, E., and Reimer, A.: *Arch. Int. Med.*, 85:389, 1950.
88. Wilkinson, C. F., Jr.; Hand, E. A., and Fliegelman, M. T.: *Ann. Int. Med.*, 29:671, 1948.
89. Wright, A.: *J. Exp. Med.*, 59:407, 1934.
90. Zinn, W. J., and Griffith, G. C.: *Am. J. Med.*, 8:525, 1950.

Diagnosis of Pheochromocytoma

By Lloyd T. Iseri, M.D., Douglas Chandler, M.D.,
Gordon B. Myers, M.D., and Albert J. Boyle, M.D.

Detroit, Michigan

ALTHOUGH the incidence of pheochromocytoma found in a series of hypertensive patients is low (0.5 per cent), it nevertheless becomes quite significant when one considers the extremely high incidence of hypertensive diseases, in general. In addition, a certain number of patients with pheochromocytoma are never considered to be hypertensive unless perchance the blood pressure is taken during a paroxysm. The recognition and the ultimate diagnosis of this condition are essential, since definitive treatment offers a reasonable assurance of a cure in an otherwise progressive and eventually fatal disease.

Case Reviews

Case 1 (reported elsewhere¹⁸).—B. M., an eight-year-old Negro boy, was admitted to City of Detroit Receiving Hospital on October 4, 1950, because of impairment of vision. The mother had noticed unusual episodes of sweating and pulsations over the anterior chest for about one year. There was a loss of weight in spite of an extremely good appetite. About one month prior to admission, the patient began to have headaches, frequency of urination, recurrent abdominal pains and vomiting, and difficulty in school due to impairment of vision. Mild periorbital edema was noted for two weeks. There was no history of hematuria or dysuria. The family history was negative for hypertension.

Physical examination.—The patient was alert, hyperactive, and slightly undernourished. The blood pressure in the arms was 210/170 mm. Hg and in the legs, 260/200 mm. Hg. The eyelids were slightly puffy and the fundi showed Grade 4 hypertensive retinopathy with hemorrhages, exudates, arteriolar spasm, and papilledema. The heart size was normal, but the apical impulse was forceful, and soft systolic murmurs were heard over the pulmonic and apical areas. The lungs were normal. A small mass, 4 cm. in diameter, was palpable deep in the left upper quadrant of the abdomen near the midline.

Laboratory examination.—The blood count was normal. The urine showed a trace of albumin. Fasting

From the Departments of Medicine and Chemistry, Wayne University, and the Department of Medicine, City of Detroit Receiving Hospital.

Supported by grants from the National Heart Institute and the Michigan Heart Association.



Fig. 1. Retrograde pyelogram of Case 1 (B. M.), showing lateral displacement of left kidney. (Reprinted from American Heart Journal, 42:129, 1951, with permission of C. V. Mosby and Co.)

blood sugar was 80 mg. per cent. Basal metabolic rate was plus 31 per cent. The multiple lead electrocardiograms showed evidence of left ventricular ischemia. The intravenous and retrograde pyelogram showed lateral displacement of the left kidney (Fig. 1).

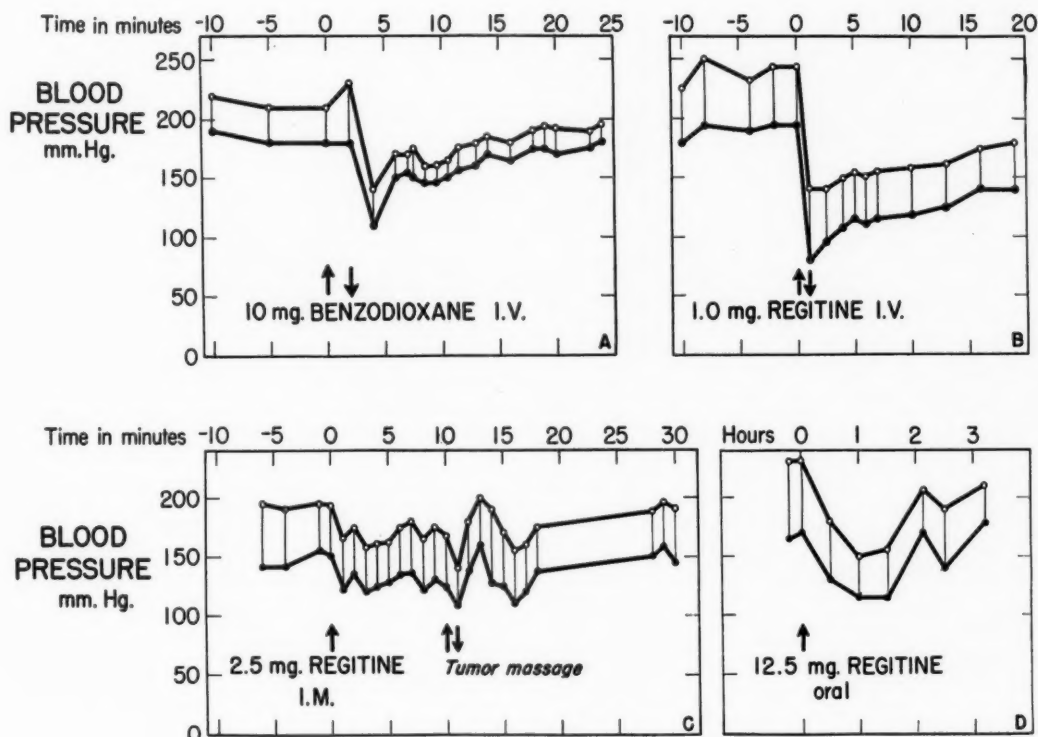
Clinical course and observations.—Diagnosis of pheochromocytoma with a persistent hypertension was established by a positive Benzodioxane and Regitine test (Fig. 2, A and B). Massage of the tumor mass (Fig. 2, C) during a partial adrenergic blockade (ten minutes after 2.5 mg. of Regitine intramuscularly, or three to six hours after 25 mg. orally) produced an initial fall and then a rise in blood pressure. Under complete adrenergic blockade (one-half hour after 25 mg. orally), no pressor response was elicited with massage of the tumor.

On a maintenance dose of oral Regitine, 25 mg. every three hours, the blood pressure fell and stabilized around 165/125 mm. Hg, the hemorrhages and exudates in the fundi began to resolve, papilledema disappeared, and the arterioles became less spastic than before. Abdominal pains and vomiting, which were present during the first two days after admission, never recurred. The electrocardiogram became normal. The patient was operated upon by Dr. J. W. Derr on the twenty-ninth day under protective adrenergic blockade, using Regitine, 25 mg. orally and 3 mg. intramuscularly (Fig. 3). A tumor, 3.7 by 3.5 cm., was found near the hilus of the left kidney, closely adherent to the renal vein. The diffi-

DIAGNOSIS OF PHEOCHROMOCYTOMA—ISERI ET AL

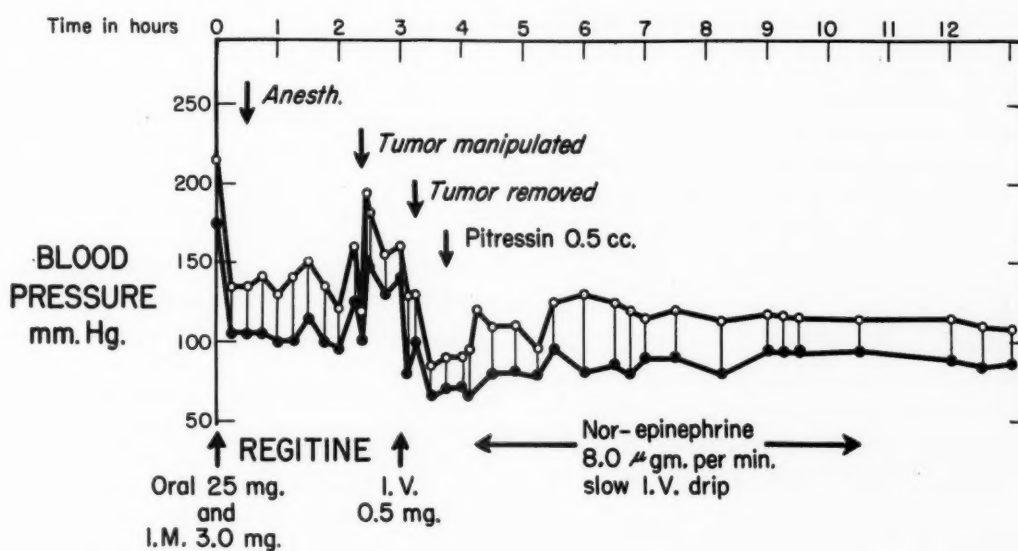
culty imposed by the anatomical relationships made it necessary for considerable handling of the tumor and consequently about the time the preoperative medication was losing its effect, the blood pressure again rose to

high levels. This was readily combated by another intravenous injection of 0.5 mg. Regitine. Following the removal of the tumor, the blood pressure fell to 90/65 mm. Hg and a continuous infusion of nor-epinephrine at



PHEOCHROMOCYTOMA WITH PERSISTENT HYPERTENSION *Effect of BENZODIOXANE and REGITINE*

Fig. 2. Diagnostic tests performed in Case 1. (Reprinted from *American Heart Journal*, 42:129, 1951, with permission of C. V. Mosby and Co.)



PHEOCHROMOCYTOMA WITH PERSISTENT HYPERTENSION *Effect of REGITINE during surgery*

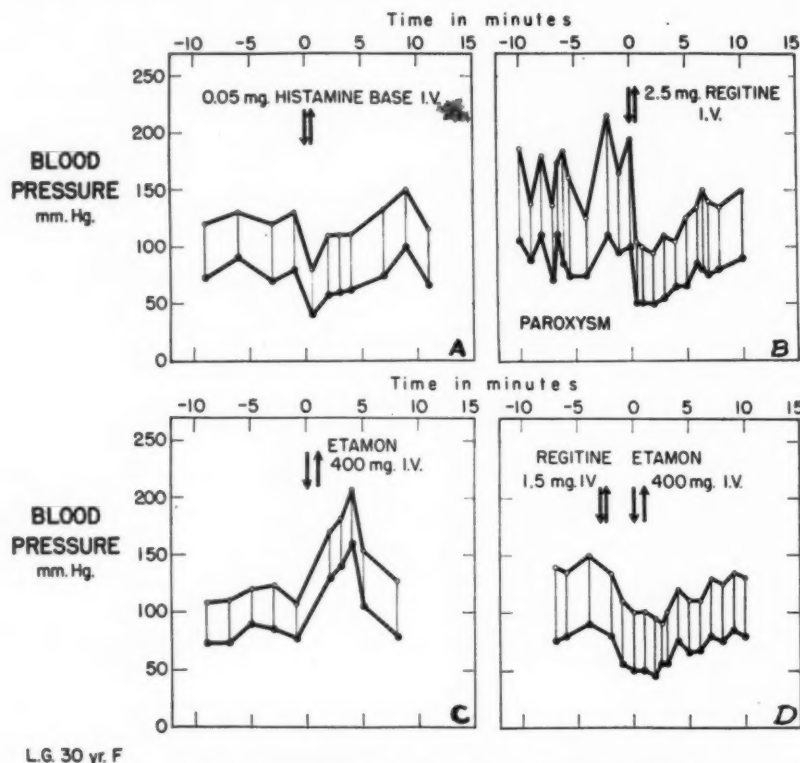
Fig. 3. Effect of Regitine and Nor-epinephrine during surgery in Case 1. (B. M.). (Reprinted from *American Heart Journal*, with permission of C. V. Mosby and Co.)

DIAGNOSIS OF PHEOCHROMOCYTOMA—ISERI ET AL

8.0 micrograms per minute was necessary for six hours to maintain the blood pressure at 120/95 mm. Hg.

Pathologic studies.—The tumor weighed 39.3 gm. and was well encapsulated except at its attachment to a por-

patient was then lost sight of until a year later, when she again presented herself at the out-patient department with additional complaints of 10-pound weight loss, recent headaches, excessive perspiration, and shortness of



PHEOCHROMOCYTOMA WITH PAROXYSMAL HYPERTENSION
HISTAMINE, ETAMON, AND REGITINE TESTS

Fig. 4. Diagnostic tests performed on Case 2 (L. G.).

tion of the renal vein. Microscopically the cells were arranged in nests and separated by fibrous tissue and rich capillary network. Lumens of two thick-walled veins were invaded by neoplastic cells, forcing a tentative diagnosis of malignant pheochromocytoma.

The tumor contained pressor substances equivalent to 0.52 mg. of epinephrine per gram of tissue. Bioassay indicated the presence of a significant quantity of epinephrine in the extract, but the chemical determination indicated the presence of 77 per cent nor-epinephrine and only 23 per cent epinephrine.

Four months later an atrophic, non-functioning left kidney was removed. Recently vague symptoms of restlessness and nervousness have reappeared, but the histamine test has remained negative and the blood pressure has been well within the normal range.

Case 2.—L. G., a thirty-year-old Mexican woman, was first seen in the out-patient department approximately one year prior to admission, complaining of burning of the skin, oligomenorrhea, nervousness and dizziness. The blood pressure recorded at that time was 150/90. The skin was noted to be moist. Other findings were negative. The symptoms were considered to be functional, since numerous psychic disturbances were uncovered. The

breath with exertion. The patient was admitted May 25, 1951, for study.

Physical examination.—The patient was slightly underweight and undernourished, resting quietly, but perspiring profusely. The blood pressure was 170/115 mm. Hg, temperature 98° F., pulse 84, and respirations 14 per minute. The retinal fundi showed a gr. i arteriolar spasm. A small, 1 cm. nodule was palpable in the left lobe of the thyroid. The rest of the examination was normal except for a distinctly palpable right kidney.

Laboratory examination.—The blood count was normal. The urine showed a trace of albumin, but otherwise it was normal. The basal metabolic rate was repeatedly between plus 90 and 92 per cent, even under heavy sodium amytal sedation. The glucose tolerance test showed a fasting blood sugar level of 96 mg. per cent, one-half hour after glucose 224 mg. per cent, one and one-half hours 292 mg. per cent, two and one-half hours 200 mg. per cent, and three and one-half hours 72 mg. per cent. Protein bound iodine was 10 micrograms per cent. Pyelographic studies revealed a slight downward displacement of the right kidney.

Clinical course and observations.—During the period prior to surgery, the blood pressure was noted to fluctu-

ate between 220/120 and 118/70 mm. Hg. The headaches became less marked, but the sweating persisted and the patient continued to lose weight. A therapeutic trial of Lugol's solution lowered the basal metabolic rate to plus 70 per cent, but since this occurred within three days and since further fall did not occur, it was felt that thyrotoxicosis was not responsible for the elevated metabolic rate.

Injection of histamine (Fig. 4, A) failed to produce a pressor response and for the time being the diagnosis of pheochromocytoma was considered to be unlikely; however, injection of etamon produced a distinct pressor response (Fig. 4, C). The fact that this was blocked by a previous injection of Regitine (Fig. 4, D) indicated that the pressor response was due to epinephrine or epinephrine-like substances. During a paroxysm induced by painful and unsuccessful arterial punctures, the widely fluctuating blood pressure and the diaphoresis were immediately controlled by an intravenous injection of 2.5 mg. Regitine (Fig. 4, B). Massage of the the right kidney produced a significant rise in blood pressure.

The patient was extremely sensitive to a single 50 mg. dose of Regitine by mouth and consequently a very small dose of 5 mg. four times a day was administered. There was no distinct effect of this homeopathic treatment except that extreme blood pressure rises did not occur and that the degree of perspiration was noticeably reduced.

The patient was operated upon by Dr. O. G. Fais, who found a well encapsulated right adrenal tumor, approximately 3.5 cm. in diameter. Surgery was attended by wide fluctuations in blood pressure, but the patient tolerated the procedure relatively well. A continuous infusion of nor-epinephrine at 8 micrograms per minute was given postoperatively to stabilize the blood pressure.

Pathologic studies.—The tumor weighed 34 grams and was well encapsulated through its entire circumference. The cells were polygonal and arranged in islands separated by a fine fibrous network.

Pressor amines were equivalent to 80 micrograms of epinephrine per gram of tissue. Chemical fractionation for nor-epinephrine and epinephrine was not carried out.

Follow-up studies revealed stabilization of blood pressure at 120/80 mm. Hg, basal metabolic rate of plus 14 per cent, and a negative etamon test. Sweating has been replaced by feeling of coldness. Body weight has increased by thirteen pounds within two months.

Discussion

Recognition of the possibility of pheochromocytoma in any given case is the most important factor in the detection of this disease, for once the suspicion is aroused, the diagnosis can usually be established. The clinical features, however, are manifold and extremely variable, making it impossible to characterize the symptom complex. Much of the difficulty can be resolved by understanding the physiological potentialities and the

SYMPTOMS, SIGNS AND LABORATORY FINDINGS IN PHEOCHROMOCYTOMA

Symptoms

Headaches
Sweating and color changes in skin (50%)
Palpitation, precordial pains, angina
Shortness of breath, pulmonary edema (50%)
Diminution of vision, dizziness
Tremulousness, nervousness, anxiety
Nausea, vomiting, epigastric pains
Weakness and malaise
History of paroxysmal symptoms (75%)

Signs

Elevation of blood pressure (persistent 75%—paroxysmal 25%)
Tachycardia (or bradycardia in 20%)
Fever (70%)
Retinal angiospasm. Malignant hypertensive retinopathy (8%)
Palpable mass, liver or kidney (50%)

Laboratory findings

Abnormal EKG
Elevated BMR (60%)
Hyperglycemia or abnormal glucose tolerance (60%)
Abnormal pyelogram (66%)

variable influence of epinephrine and nor-epinephrine, which are secreted in different proportions by these tumors.^{10,18}

Contrary to the general belief, epinephrine (in the usual doses) causes an over-all vasodilatation, the pressor effect being brought about by the tremendous increase in the cardiac output.¹¹ Epinephrine, therefore, elevates the systolic blood pressure without greatly affecting the diastolic pressure and it also increases the cardiac rate. Although the over-all response to epinephrine is vasodilatation, the cutaneous vessels undergo a marked vasoconstriction, accounting for the visible vasomotor manifestations of pallor followed by reactive hyperemia. In addition, epinephrine, in doses much less than that required for pressor effect, mobilizes liver and muscle glycogen, producing hyperglycemia and decreased glucose tolerance. In comparable doses, it also increases oxygen utilization, leading to increased heat production and increased basal metabolic rate. Sweating occurs reflexly in response to the increased heat production.²⁵ Central nervous system stimulation also follows epinephrine injection.

In contrast, nor-epinephrine produces a generalized vasoconstriction with no effect or even with slight decrement in cardiac output.¹¹ The diastolic as well as the systolic pressure, therefore, is consistently increased. Nor-epinephrine occasionally produces a bradycardia indirectly through

DIAGNOSIS OF PHEOCHROMOCYTOMA—ISERI ET AL

TABLE I. CLINICAL AND PHYSIOLOGICAL CLASSIFICATION OF PHEOCHROMOCYTOMA

Major Group	Minor Group	Pathological Physiological Basis
I. Paroxysmal hypertension 25 %	A. No metabolic disturbance during or between paroxysms	No pressor substances between paroxysms Nor-epinephrine during paroxysms
	B. Metabolic disturbances only during paroxysm	No pressor substances between paroxysms Epinephrine or mixture of epinephrine and nor-epinephrine during paroxysms
	C. Metabolic disturbances during and between paroxysms	Epinephrine between paroxysms and Additional epinephrine and/or nor-epinephrine during paroxysms
II. Sustained hypertension 75 %	A. No associated metabolic disturbances	Continuous nor-epinephrine secretion (Pressor substances may not be detectable ³ in "secondary hypertension")
	B. Associated metabolic disturbances	Continuous secretion of epinephrine with or without nor-epinephrine (or large amount of nor-epinephrine alone)

the cardioinhibitory reflex. Nor-epinephrine in physiologic doses has very little effect on metabolism, failing to produce hyperglycemia or hypermetabolism. It has no central nervous system stimulating properties. Recently it has been shown that pulmonary capillary pressure is increased by nor-epinephrine,⁷ but not by epinephrine.²⁷ This may account partly for the frequent observation of pulmonary edema usually attributed to acute left ventricular failure.

Variability in the clinical picture thus can be explained theoretically by the constancy or the intermittency in the secretion as well as the relative secretions of these two pressor substances. Table I correlates the different clinical syndromes seen in pheochromocytoma with the secretions of epinephrine and/or nor-epinephrine. In general, the syndromes can be divided into two major groups, those with normotension but with paroxysmal hypertension (Group I), and those with persistent hypertension (Group II). Minor variations occur with respect to hypermetabolism and hyperglycemia. Paroxysmal release of nor-epinephrine alone probably accounts for the paroxysmal hypertension with no metabolic disturbances (Group I, A), whereas paroxysmal release of epinephrine with or without nor-epinephrine explains the accompanying metabolic changes (I, B).^{*} Continuous secretion of subpressor quantity of epinephrine is no doubt, responsible for the persistent metabolic disturbances between attacks (I, C). Case 2 in the present report falls in this group.

Sustained hypertension without hypermetabolism and hyperglycemia (Group II, A) may result from continuous secretion of nor-epinephrine. There is considerable evidence, however, that a certain percentage of patients in this group actually have no increase in circulating pressor amines.

^{*}Large quantities of nor-epinephrine alone may also produce metabolic abnormalities.

Goldenberg¹⁰ considers these patients as suffering from "secondary hypertension." Whether vascular changes due to prolonged vasoconstriction or whether hypercorticism³ is responsible for the continued hypertension is not known. When metabolic disturbances are associated with sustained hypertension, as in Group II, B, the difficulty is most likely due to a continuous secretion of epinephrine with or without nor-epinephrine, although it is known that a large quantity of nor-epinephrine alone is capable of producing certain metabolic disturbances. Case 1, with an increased basal metabolic rate and persistent hypertension, characterizes this last group.

The symptoms, signs, and positive laboratory tests usually found in pheochromocytoma are listed herewith. Long-term follow-up of these cases before the establishment of the diagnosis indicates that at the onset of the illness, the various symptoms occur in paroxysms.²³ In fact, a past or present history of paroxysmal episodes can be obtained in approximately 75 per cent of the cases.²⁵ There is a tendency, in the natural course of the disease, for the paroxysms to become more and more frequent and often less and less alarming in nature.¹³ Eventually, a certain percentage of the cases develop a sustained hypertension with almost continuous but very minimal symptoms. In about 25 per cent of the cases, there is no history of a paroxysmal origin and together with the group of patients who eventually develop a sustained hypertension, they closely resemble the classical variety of well-established essential vascular hypertension. Necrotic degeneration of the vascular system may occur in a small percentage of cases.

Among the symptoms listed, recurrent headache is probably the most common complaint, but this may not be present at the onset of the illness, as was found in Cases 1 and 2. It is usually associated with one or the other of the symptoms listed

in the table. Smithwick²⁵ emphasizes the importance of abnormal sweating, finding this in nine out of ten cases. Fifty-two per cent of the patients reported in the literature mentioned sweating as one of the symptoms, but probably more patients will complain about this if specifically questioned. Sweating commonly follows a paroxysm, but may occur in patients with no history of paroxysms. Case 2 in the present report complained bitterly of excessive perspiration, which often occurred without any preceding paroxysms. Sweating also occurred in Case 1. Palpitation and precordial pains are frequent complaints and at times true angina from coronary insufficiency with electrocardiographic changes may occur.

Probably the most alarming and the gravest of symptoms are the recurrent attacks of pulmonary edema experienced by approximately one-half of the patients with pheochromocytoma.¹⁶ Acute left ventricular failure from increased peripheral resistance and myocardial ischemia account for the paroxysmal development of pulmonary edema. The fact that nor-epinephrine indirectly increases pulmonary capillary pressure without apparent left ventricular failure⁷ may also explain the pathogenesis of this alarming symptom.

Diminution of vision, as in Case 1, results from hypertensive retinopathy. Tremulousness, nervousness, and anxiety are usually present in most cases because of the central nervous system effect of epinephrine. These symptoms were responsible for the mistaken diagnosis of psychoneurosis in Case 2. Nausea, vomiting and epigastric pains are not readily explainable, but do occur frequently in pheochromocytoma (Case 1).

It would seem that detection of an elevated blood pressure at one time or another is a priori necessary for the diagnosis of pheochromocytoma; however, it is possible that metabolic disturbances may precede the development of paroxysmal or sustained hypertension for some time.⁵ The classical type of paroxysmal hypertension is actually less common (25 per cent) than the more subtle type of persistent hypertension (75 per cent).⁸ In Calkins' series of twelve cases, however, percentages were reversed.² Usually during a paroxysm there is a tachycardia, but occasionally there may be a bradycardia (20 per cent) similar to that observed when nor-epinephrine is injected. A low-grade fever was unexpectedly found in as much as 70 per cent of the cases.²⁵ This can be explained by

the increased production and decreased loss of heat brought about by cutaneous vasoconstriction. Neither of the two present cases, however, had any fever. Either the tumor itself or the displaced kidney or liver can be palpated in approximately 50 per cent of the cases.²⁶

Among the laboratory tests that may be abnormal are the electrocardiogram, basal metabolic rate, fasting blood sugar, and glucose tolerance tests. The urine may show albuminuria and cells in those resembling malignant hypertension or it may show varying degrees of glycosuria. Since the tumor is usually small (average 3.0 cm. in diameter) when symptoms become prominent, the pyelographic studies may not reveal any abnormalities. Surprisingly, however, abnormal pyelographic pattern is observed in as much as 66 per cent of the cases.²⁶ Case 1 had a distinctly abnormal pyelographic pattern, but Case 2 had only a questionably abnormal pattern.

The ultimate clinical diagnosis depends greatly upon the pharmacological tests designed (1) to provoke a discharge or potentiate the action of pressor substances, or (2) to block the action of these substances. Much of the indication, as well as the resulting success or failure of these tests, depends upon the physiological activity of the tumor. Provocative tests, using histamine or mecholyl, should prove helpful between attacks in patients with a paroxysmal history (Group I). Potentiating activity of tetraethyl ammonium (etamon test) may uncover suppressor quantities of circulating epinephrine (Group I, C), or it may exaggerate the pressor factors in Group II. Adrenergic blockade by Benzodioxane or Regitine is most adaptable during paroxysms or in patients with sustained hypertension (Group II).

Histamine Test.—This test, first described by Roth and Kvale,²² has proved to be extremely valuable in the detection of pheochromocytoma. The test should be performed on patients who are normotensive or who have only a moderate elevation of blood pressure. 0.025 mg. of histamine base is injected intravenously and the blood pressure followed every minute for five minutes before and ten minutes after the injection. A positive response is indicated by a substantial rise in blood pressure (100 mm. Hg) over the control levels. Caution, however, must be exercised in the interpretation of these tests, for a number of false positive tests have been reported.² A cold pressor test should always

be performed, since hyperreactors to this test will also react often with an equally high pressor response to histamine. Attempts to differentiate the neurogenic from the humoral (epinephrine and/or nor-epinephrine) factors in these two tests by the use of sodium amytal and Regitine failed in one recent case observed in this hospital. This patient had a positive histamine test, which could be blocked by Regitine, and a positive cold pressor test, which could be blocked by sodium amytal sedation. Exploration of the abdomen revealed only a small adrenal cortical tumor, but no pheochromocytoma.

False negative histamine test has been cited by others^{2,23} and was observed in Case 2. No good explanation can be given for these false negative tests, but in the present case it may have been due to the fact that the tumor contained comparatively very little pressor substance per gram of tissue.

*Mecholyl Test.*¹⁵—Subcutaneous injection of 25 mg. of mecholyl supposedly stimulates the adrenal tumor directly, provoking a discharge of pressor amines. The test must be preceded by an injection of 1 mg. atropine sulfate to prevent the annoying gastrointestinal as well as the dangerous cardio-inhibitory reactions.

*Etamon Test.*¹⁹—This is carried out in a similar manner to the histamine test. After testing for sensitivity with 50 mg., 200 mg. of tetraethyl ammonium chloride is injected intravenously over one minute duration. A significant rise in blood pressure suggests the presence of a pheochromocytoma.

Although there is a possibility that etamon will stimulate the actual secretion of pressor substances from the adrenal gland or from the tumor itself,⁸ the rise in blood pressure produced by etamon in proven cases of pheochromocytoma is probably due to the potentiation of circulating amines by ganglionic blockade of compensatory depressor fibers.^{20,21} Those cases with a negative histamine but a positive etamon test (Case 2 and case mentioned by Aranow¹) undoubtedly have significant but subpressor quantities of epinephrine constantly circulating in the blood stream. The persistent hypermetabolism in Case 2 conforms to this explanation.

False negative etamon test would thus be anticipated in those patients with no circulating amines during the interval between paroxysms

(Groups I, A and I, B). False positive tests will probably be uncovered, since pressor response to etamon occurs in a significant number of patients with hypertensive vascular disease.²³

A physiological or mechanical stimulation of the tumor substance may occasionally give invaluable information, as illustrated in both of our patients. Under partial adrenergic blocking, which lowered the blood pressure slightly in Case 1, direct massage of the tumor produced a blood pressure rise. Greater significance of this observation was obtained during a complete adrenergic blockade when massage of the tumor produced no pressure rise. In Case 2, massage of the right kidney produced a significant rise in blood pressure, not only helping to diagnose the condition, but also localizing the tumor to the right side.

Provocative or potentiating tests, which might induce a paroxysm, are not without danger and should be used with extreme caution in patients with a weakened cardiovascular system or in patients who give a history of pulmonary edema.

*Benzodioxane Test.*¹²—This test has been the most widely used diagnostic procedure for patients with persistent hypertension. Ten milligrams per square meter of body surface (15 to 20 mg. usual dose), injected intravenously over a two-minute period, produce a fall in blood pressure when the test is positive. The degree and duration of fall should be graphically charted and the millimeter-minute fall should be counted. Over 300 mm.-minute fall should be obtained before any significance can be attached to the test. Case 1 had a systolic fall of 672 mm.-minute and a diastolic fall of 474 mm.-minute, comparable to the degree of fall observed by Goldenberg in his original cases.¹²

False negative tests⁹ occur in the so-called "secondary hypertension" due to pheochromocytoma, in which the pressor amines are apparently not in actual circulation (variation of Group II, A). False positive tests have occurred in uremic patients⁶ and we have seen a suggestive but false positive test in a patient with a colloid cyst of the third ventricle.

In addition to these limitations, Benzodioxane has caused alarming hypertensive encephalopathic reactions in essential vascular hypertension,⁴ so that routine use of this drug for testing must be conducted with caution.

Regitine Test.—Recently another adrenergic blocking test has been introduced.^{14,18} The test is performed by injecting intravenously 1.5 to 2.0 mg. (1.0 mg. per sq. M.) of Regitine and following the blood pressure every minute for ten minutes before and after the injection.¹⁸ A significant fall in blood pressure, similar to that obtained in the Benzodioxane test, signifies a positive reaction. Grimson^{6,14} has used larger amounts (.08 to .33 mg. per kg.) intravenously, but the development of tachycardia may limit the use of these larger doses.

Case 1 also responded with a significant fall in blood pressure to 2.5 mg. (2.5 mg. per sq. M.) of Regitine injected intramuscularly. The fall was not as precipitous or as marked, but was more prolonged. Use of 5 mg. intramuscularly, as recommended by Grimson, may prove to be the most practical method for a routine test, since in patients with essential hypertension no side reaction has been observed.^{6,17}

So far, with 5 mg. of Regitine intramuscularly, a false positive test has not been obtained, but with 10 mg. intramuscularly, given to hypertensive uremic patients, two false positive tests have been observed.⁶ Intravenous injection of 0.16 mg. per kg. has produced a fall in blood pressure in a uremic patient without pheochromocytoma, but the analysis of the blood indicated a high content of pressor amines.⁶

Both Benzodioxane and Regitine may be used to block a provocative or a potentiating test. These drugs can be given about two minutes before attempting to provoke a reaction. The specificity of the etamon test in Case 2 was greatly increased by the ability of Regitine to nullify a pressor response to tetraethyl ammonium chloride. Blocking of the pressor response to massage of the tumor in Case 1 was obtained with complete adrenergic blockade, using Regitine, but not with incomplete blockade.

Summary and Conclusions

Two cases, proven to have a pheochromocytoma, have been presented. Clinical symptoms, signs and laboratory tests have been reviewed and a physiological classification of the various symptom complexes by which this tumor may manifest itself has been presented. Ultimate diagnosis by pharmacological and physiological tests is usually successful, but the occurrence of false positive and false negative tests should be kept in mind.

In patients with normal or mild hypertension between attacks of paroxysm, the provocative or potentiating test, using histamine and etamon, should be tried. In patients during paroxysm or with persistently elevated blood pressure, Regitine and Benzodioxane tests are recommended. Screening of patients with essential vascular hypertension with 5 mg. of Regitine intramuscularly may prove to be the most practical form for routine use, although intravenous Regitine test may be necessary in suspected cases. Blocking of provocative or potentiating tests with Regitine may also give additional information necessary toward the establishment of the final diagnosis.

Bibliography

1. Aranow, H., Jr.: *Progress in Clinical Endocrinology*. S. Soskin, Editor, 1950.
2. Calkins, E., Dana, G. W., and Howard, J. E.: *J.A.M.A.*, 145:880, 1951.
3. Calkins, E., Dana, G. W., Seed, J. C., and Howard, J. E.: *J. Clin. Endocrin.*, 10:1, 1950.
4. Drill, V. A.: *New England J. Med.*, 241:777, 1949.
5. Duncan, L. E., Jr., Semans, J. H., and Howard, J.: *Ann. Int. Med.*, 20:815, 1944.
6. Emlet, J. R., Grimson, K. S., Bell, D. M., and Orgain, E. S.: *J.A.M.A.*, 146:1383, 1951.
7. Fowler, H. O., Westcott, R. N., Scott, R. C., and McGuire, J.: The effect of nor-epinephrine upon pulmonary arteriolar resistance in man. *J. Clin. Investig.*, 30:517, 1951.
8. Goldenberg, M.: *Am. J. Med.*, 10:627, 1951.
9. Goldenberg, M., and Aranow, H., Jr.: *J.A.M.A.*, 143:1139, 1950.
10. Goldenberg, M., Aranow, H., Jr., Smith, A. A., and Faber, M.: *Arch. Int. Med.*, 86:823, 1950.
11. Goldenberg, M., Pines, K. L., Baldwin, E. de F., Greeve, D. G., and Roh, C. E.: *Am. J. Med.*, 6:792, 1948.
12. Goldenberg, M., Snyder, C. H., and Aranow, H., Jr.: *J.A.M.A.*, 135:971, 1947.
13. Green, R. H.: *J.A.M.A.*, 131:1260, 1946.
14. Grimson, K. S., Longino, F. H., Kernodle, C. E., and O'Rear, H. B.: *J.A.M.A.*, 140:1273, 1949.
15. Guarneri, V., and Evans, J. A.: *Am. J. Med.*, 4:806, 1948.
16. Howard, J. E., and Barker, W. H.: *Bull. J. Hopkins Hosp.*, 61:371, 1937.
17. Iseri, Lloyd T.: Personal experiences.
18. Iseri, L. T., Henderson, H. W., and Derr, J. W.: *Am. Heart J.*, 42:129, 1951.
19. La Due, J. S., Mutison, P. J., and Pack, G. T.: *Ann. Int. Med.*, 29:914, 1948.
20. Moe, G. H.: *J.A.M.A.*, 137:1115, 1948.
21. Page, I. H., and Taylor, R. D.: *J.A.M.A.*, 135:348, 1947.
22. Roth, G. M., and Kvale, W. F.: *Am. J. Med. Sci.*, 210:653, 1945.
23. Shapiro, A. P., Baker, H. M., Hoffman, M. S., and Ferris, E. B.: *Am. J. Med.*, 10:115, 1951.
24. Smithwick, R. H.: Quoted by Aranow, H., Jr.¹
25. Smithwick, R. H., Greer, W. E. R., Robertson, C. W., and Wilkins, R. W.: *New England J. Med.*, 242:252, 1950.
26. Soffer, L. J.: *Diseases of the Adrenal*. Philadelphia: Lea and Febiger, 1948.
27. Witham, A. C., and Fleming, J. W.: The effect of epinephrine on the pulmonary circulation in man. *J. Clin. Investig.*, 30:707, 1951.

Angiocardiographic Observations in Some Correctible Types of Congenital Cardiovascular Disease

By M. M. Figley, M.D., A. M. Stern, M.D.,
J. L. Wilson, M.D., and F. J. Hodges, M.D.

Ann Arbor, Michigan

RADIOGRAPHIC visualization of the interior of the heart and great vessels has been practical since 1941 when Robb and Steinberg¹⁴ described a method which today, without significant modification, is widely used in many medical centers. Since certain cardiovascular anomalies have become surgically correctible, this examination has assumed increasing importance in preoperative diagnosis and appraisal. In this paper, the angiocardiographic features of these correctible lesions will be described and an attempt will be made to assess the usefulness of the procedure.

In the past four years, some 450 cases of congenital heart disease have been seen at the University of Michigan, and 122 of these have been studied by angiocardiography. While this experience is not as broad as is available elsewhere, still it seems sufficient to show, in a general way, the most advantageous uses of the examination. Many of these patients have had cardiac catheterization; some have had operative verification, and a minority autopsy verification of their lesions, so that in all but a few, there is good reason to believe the anatomic defects are accurately known. As is obvious from the figures above, not all the patients have been considered suitable candidates for angiocardiography.

The method itself is quite simple and requires rapid serial filming of the thorax as blood containing radiopaque material passes through the heart and vessels. It is necessary to make a very rapid intravenous injection of a large volume of safe, water soluble, contrast material. Preliminary circulation time tests are not helpful in predicting the optimum exposure time for the visualization of

various structures because of individual differences in injection speed, heart rate, and course of blood flow. To overcome these variabilities, a large number of films exposed as rapidly as two per second is considered necessary if significant features are not to be missed. For this purpose, a device has been constructed in the laboratory of the X-Ray Department of the University of Michigan. This provides automatic direct roentgen exposure of 11 by 11 inch frames on a long roll of film at rates of 1.3, 2, and 4 films a second to a total of 30 films. Details of construction and operation are described elsewhere.¹⁹

Technique

Before the angiocardiogram is performed, sensitivity to iodine is searched for with Lugol's solution given orally the day before the procedure. A preliminary intravenous dose (0.5 to 1 cc. of the specific contrast material used) is given twenty minutes before filming. Prophylactic penicillin and an antihistamine are also given prior to the study. Under local anesthetic and morphine sedation, as large a cannula as possible is tied in an antecubital vein to prevent extravasation and to permit sufficiently rapid injection. The injection time must not exceed two seconds. The patient is then positioned for filming. The examination may be carried out in either horizontal or vertical position, depending on the patient's age and co-operation. After the position and exposure are checked radiographically, the injection is forcibly made, if there had been no response to the previous test dose. Diodrast 70 per cent or NeoIopax 75 per cent are used in dosage of 0.5 cc/lb up to a maximum of 50 cc. Adults are instructed to inhale with the injection, but in infants and children respiration cannot be controlled. Filming begins immediately before injection, usually at the rate of two per second, and continues for ten to twelve seconds. Ordinarily, one projection suffices, but another may be obtained later if sufficient information is not obtained from the initial study.

A great variety of anomalies occur. Every structure of the heart or vessels has been found to have some more or less significant deviation from the normal. These anomalies may be single or in combination resulting in an almost uncountable total of variations. The commonest ones can now be recognized quite accurately clinically, and very accurately if all laboratory procedures including cardiac catheterization and angiocardiography are

From the Department of Roentgenology and the Department of Pediatrics and Communicable Diseases, University of Michigan Hospital, Ann Arbor, Michigan. Dr. Stern is the Michigan Heart Association Research Instructor in Pediatrics.

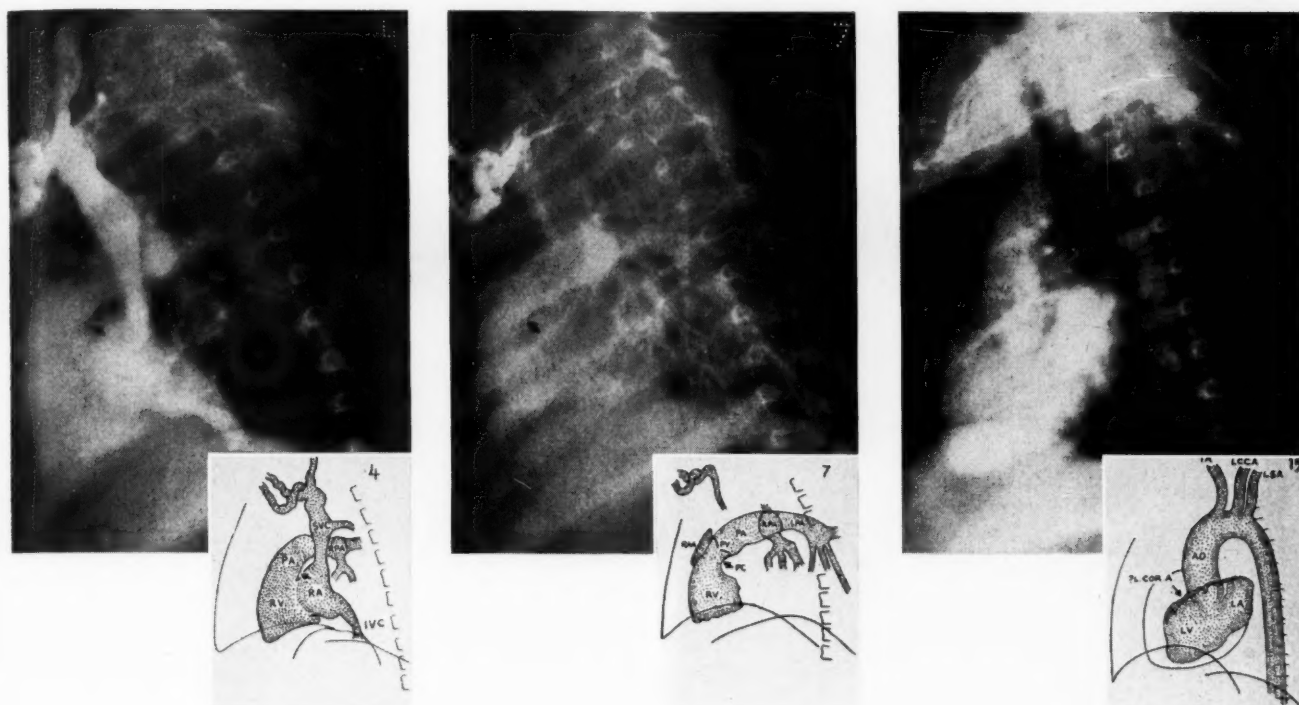


Fig. 1. Normal infant heart, left anterior oblique, four films per second. SVC superior vena cava; IVC inferior vena cava; RA right auricle; RAA right auricular appendage; RV right ventricle; PC pulmonary conus (outflow tract right ventricle); PV pulmonary valve; PA undivided pulmonary artery; RPA right pulmonary artery; LPA left pulmonary artery; LA left auricle; LV left ventricle; L. cor. A left coronary artery; AO aorta; IA innominate artery; LCCA left common carotid artery; LSA left subclavian artery. Normal contraction of right ventricular outflow tract (arrows, Films 4 and 7).

applied. Fortunately, present surgical corrective measures are available to a large group of congenital cardiac patients. This paper concerns itself with: coarctation of the aorta, patent ductus arteriosus, tetralogy of Fallot, pulmonary valvular stenosis with intact ventricular septum, tricuspid atresia with underdeveloped right ventricle.

For reference, a normal angiocardigram in a two-year-old child is shown in Figure 1. This has been made in a steep, right, posterior oblique projection at the rate of four films per second. Films are numbered sequentially in the upper right corner from number 1, which is the first to show contrast in the superior vena cava. In this case, Films 4 and 7 were exposed $\frac{3}{4}$ and $1\frac{1}{2}$ seconds, respectively, after the vena cava first filled. The other films in this paper were exposed in similar projection at half this speed so that there is $\frac{1}{2}$ second interval between films. Film 4 of this example shows prompt fill of the right cardiac chambers from the still opaque vena cava, but contrast has not yet reached the smaller pulmonary vessels in full concentration. The structures of the left side of the heart are notably non-opacified at this time. Slight reflux into the inferior vena cava is seen

TABLE I. NORMAL RANGES OF ANGIOCARDIOGRAPHIC OPACIFICATION TIME*
(In seconds after initial fill superior vena cava)

	2 Mo.-2.5 Yrs. (4 cases)		11-63 Yrs. (24 cases)	
	Initial fill	Last fill	Initial fill	Last fill
Superior Vena Cava	0	.5-1	0	.5-3
Right Ventricle	.5	1-2	0-1.5	2.5-6.5
Pulmonary Arteries	.5	1-2.5	0-3	2.5-8
Left Heart Chambers	1.5-2	3.5-5	3-7	6.5-12
Aorta	2-2.5	4-5.5	3.5-7.5	7-13.5

*Extreme Values Throughout.

coming from the well-demarcated right auricle. The right ventricle is seen in diastole with its outflow portion well shown. On Film 7, $\frac{3}{4}$ seconds later, the pulmonary arteries are more densely opaque. Vena cava fill has ceased, and the right auricle is empty. The outflow portion of the right ventricle has narrowed in partial systole. Two seconds later, on Film 15, the left cardiac chambers, the outflow tract of the left ventricle, the aorta, and great vessels are clearly seen, whereas the right chambers and pulmonary arteries are free of contrast material. Any fill of these latter chambers at this time is not normal. Although the coronary

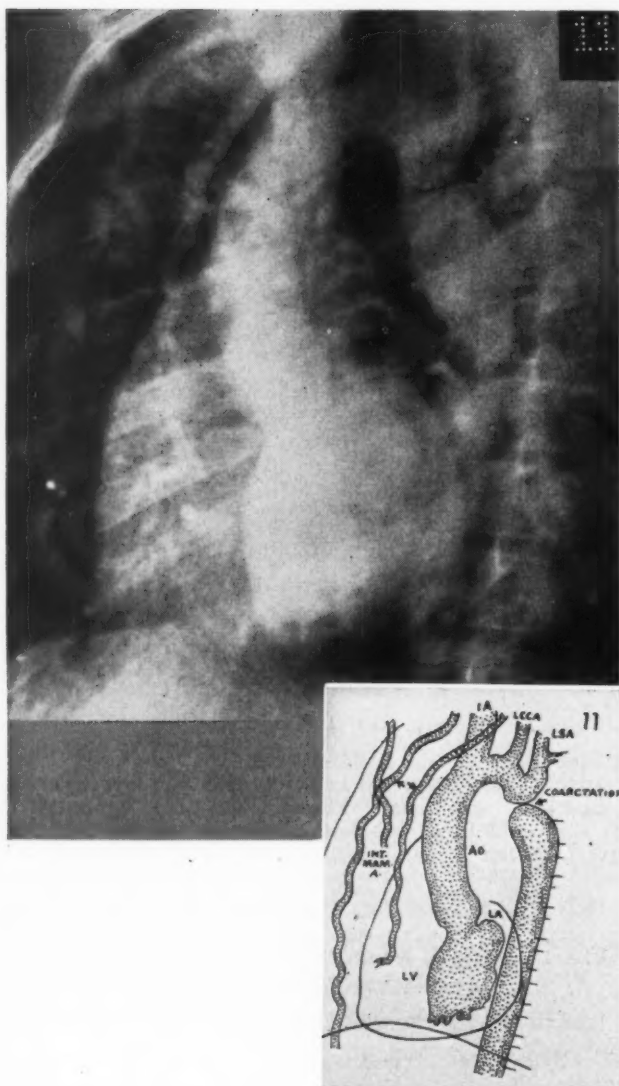


Fig. 2. Coarctation of aorta, left anterior oblique. Note coarctation (arrow), large left subclavian artery, large internal mammary arteries (arrows). Surgical confirmation.

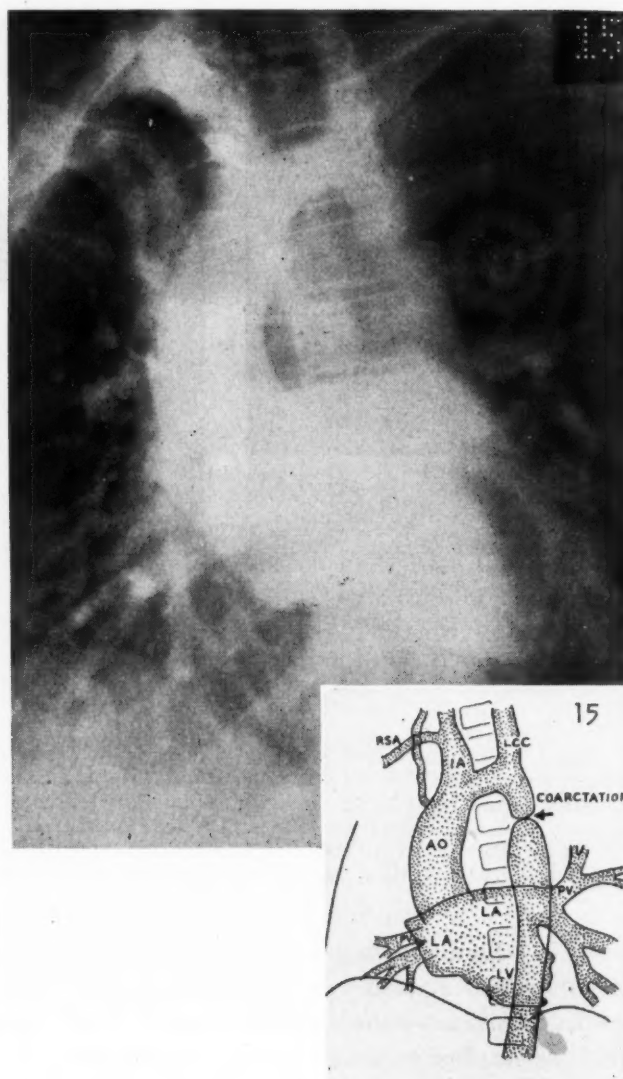


Fig. 3. Coarctation of aorta including original of left subclavian artery, left anterior oblique. Note coarctation (arrow), non-visualization of left subclavian artery. Surgical confirmation.

arteries are not usually seen, the branches of the left coronary artery are shown in this instance.

The general range of opacification time for the various structures is shown in Table I.

Coarctation of the Aorta

This lesion is readily diagnosed clinically if the blood pressure in both the arms and legs is carefully examined. Usually, angiocardiographic confirmation is unnecessary. However, in this hospital, the examination is desired in all patients for whom excision of the coarctation is considered, so as to provide the surgeons with as much information as possible about the exact pathologic anatomy before thoracotomy.

Generally, the angiocardiogram shows the coarctation sharply localized and immediately distal to the origin of the subclavian artery (Fig. 2). This artery and the internal mammarys are regularly enlarged. The ascending aorta is sometimes quite dilated. A forward buckling of the aorta at the site of stricture is usually present, as is some post-stenotic dilatation. The size of the small orifice is not seen. There is generally delayed fill of the distal aorta which, however, remains filled unduly long as collaterals slowly bleed contrast material into it.

Frequently, surgically significant variations are encountered. Sometimes, the coarctation may be very near the left subclavian artery implicating

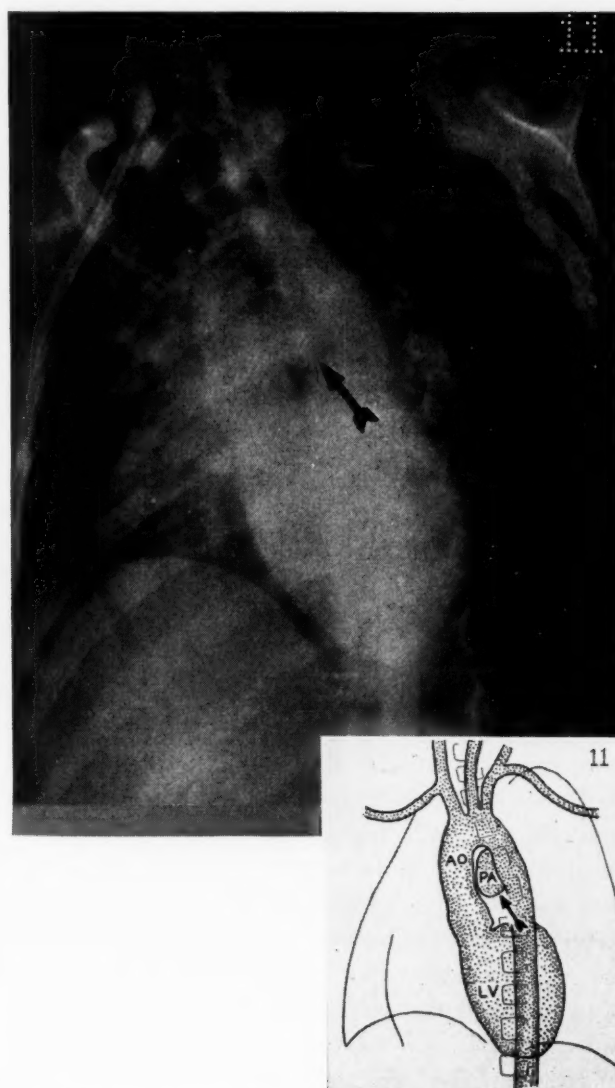
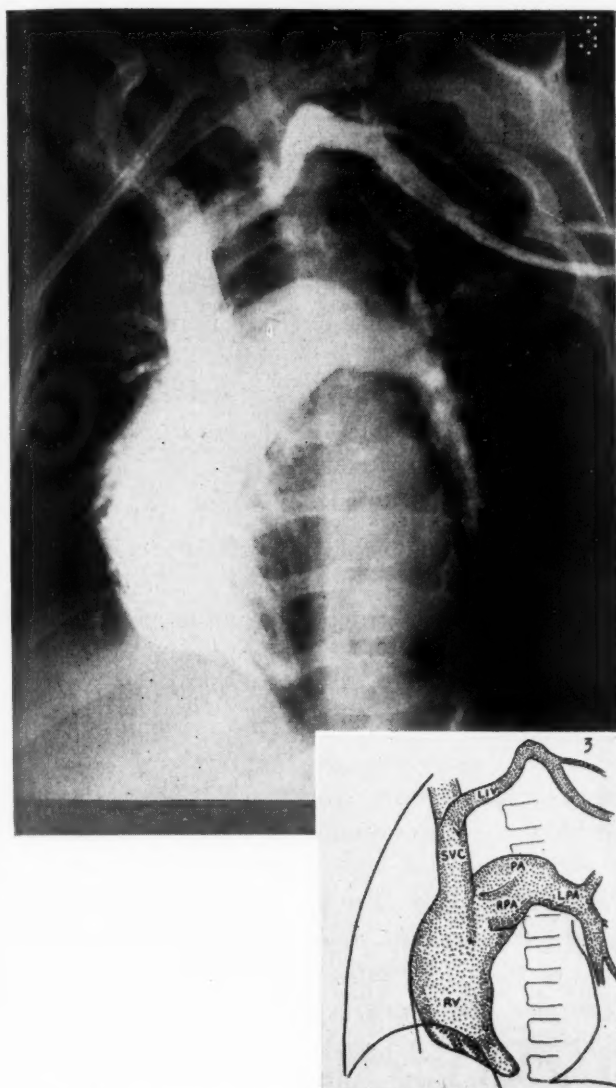


Fig. 4. Patent ductus arteriosus, left anterior oblique, two films per second. Note large pulmonary artery, local aortic bulge, refill of pulmonary artery (arrow, Film 11). Surgical confirmation.

undesirable sacrifice of this artery with its disturbing effect on the collateral circulation. The coarctation may actually include the origin of the left subclavian artery as seen in Figure 3. Sometimes the coarctation is rather long and will not permit excision with primary end-to-end anastomosis. An arterial graft must be inserted in such a case.⁹ To assist the surgeon, assessment of the collateral circulation and the size of the great vessels is valuable. We have seen one case in which the collateral vessels were insufficient to allow occlusion of the aorta for excision without jeopardizing the distal viscera. Locally, the collateral vessels may be so large that troublesome bleeding occurs at operation. Aneurysms in these may be the site of fatal rupture. Occasionally, a patent ductus arteriosus is present. Finally, the coarctation may not be in the thoracic aorta but in an

uncorrectible form in the abdomen. This was discovered in an angiogram of a young woman who had already made plans for thoracic surgery. Since many of these variations can be demonstrated by angiocardiology, the pre-operative examination is amply justified and often rewarding.

Generally, the venous angiogram as described is sufficient. In our experience, this is the case when the site of coarctation is short and lies near the left subclavian artery. In several of our cases with poor visualization, subsequent exploration showed the coarctation to be long and diffuse, or at some distance distally. When poorly seen the coarctation may be studied further by thoracic aortography. Then, the aorta is opacified by retrograde injection into the left common carotid artery by needle or cannula,⁴ or through the left brachial

artery by catheter or cannula.¹³ Considering the operative procedure and greater risk of cerebral damage, we prefer angiocardiology as a routine, and hold aortography in reserve.

Patent Ductus Arteriosus

The clinical features of this lesion and the possibility of complete surgical cure are well known. Usually, because of the higher pressure in the aorta than in the pulmonary artery, the patent vessel allows a "left to right" shunt of oxygenated blood between these arteries resulting in useless recirculation of blood through the lungs. The angiocardio-gram demonstrates the reopacification of the pulmonary arteries from the aorta after the right ventricle has emptied (Fig. 4). Simultaneous fill of the pulmonary arteries and aorta is not normal provided the injection is sufficiently rapid (less than two seconds' duration). Refill occurs in several lesions and is not specific for patent ductus arteriosus. Often the undivided pulmonary artery is demonstrably enlarged, the left pulmonary artery may be unusually high in position, and as shown by Sussman, local aneurysmal enlargement of the aorta at the origin of the ductus is an almost invariable and specific finding.¹⁷ The ductus itself is not shown, being too small or short (often only a window between the vessels) to be projected free of other vessels.

Despite these apparently distinguishing features, angiocardiology is seldom necessary for diagnosis. Likewise, the additional information obtained by this procedure is but rarely helpful to the surgeon. Since these opinions prevailed at the onset of our interest in angiocardiology, and we have found no reason to believe otherwise, we have used it in only six cases. Though in all, one or more of the features described above was found and the correct diagnosis suggested, in the light of present experience with the vagaries of the circulation recorded by this method, we would hesitate to make the diagnosis so confidently now from the angiocardigraphic evidence alone.

There are a few cases of patent ductus arteriosus where the diagnosis is not clinically certain. For these "atypical" cases, some diagnostic auxiliary measure is desirable. In our opinion, angiocardigraphic findings are not sufficiently specific that other non-correctible causes of left-to-right shunts may be excluded. Cardiac catheterization now seems to be a more reliable method to meet this

situation. If it is not available, recourse may be made to retrograde thoracic aortography through which the ductus itself, on occasion, may be seen and where usually the diagnosis is clearly evident as the pulmonary arteries are filled from the opaque aorta. This latter procedure can be of great value in infants with congestive failure as the only manifestation of a patent ductus arteriosus or coarctation.¹² We now employ one of these other methods above for the "atypical" cases where a patent ductus arteriosus is a possibility and must be excluded.

Tetralogy of Fallot

This is the commonest type of congenital heart disease associated with cyanosis.¹⁸ In this condition, the aorta is situated so as to override the ventricular septum in which there is a high membranous defect (dextroposition of the aorta). This allows the aorta to be in direct communication with both ventricles, thereby receiving blood in near equal pressure from each, and permitting some of the unoxygenated venous blood entering the right heart to bypass the lungs. In addition, pulmonary blood flow is further reduced by an obstruction usually situated in the outflow portion of the right ventricle (infundibular stenosis). This takes the form of a narrow muscular channel, perhaps with some slight dilatation in its center, the so-called third ventricle.⁸ Besides this subpulmonic stenosis, the undivided pulmonary artery is often reduced in calibre. Less commonly, the pulmonary stenosis is valvular rather than subpulmonic. The right ventricle is regularly hypertrophied, maintaining as it must, systemic arterial pressure. The left heart is usually normal.

The angiocardio-gram shows these features quite consistently. The principal finding is the premature fill of the aorta from the right ventricle before significant contrast has reached the left ventricle (Fig. 5). Since the aorta is also later opacified by blood returning from the lungs to the left heart, it is clear that it must receive blood from both ventricles. A ventricular septal defect, therefore, must be present though its margins are seldom outlined on the films. The dextroposition of the aorta is occasionally seen directly by an eccentric position of the base of the aorta over the ventricular septum (Fig. 5).

In the usual steep left anterior oblique projection, the area of pulmonary stenosis is not seen,

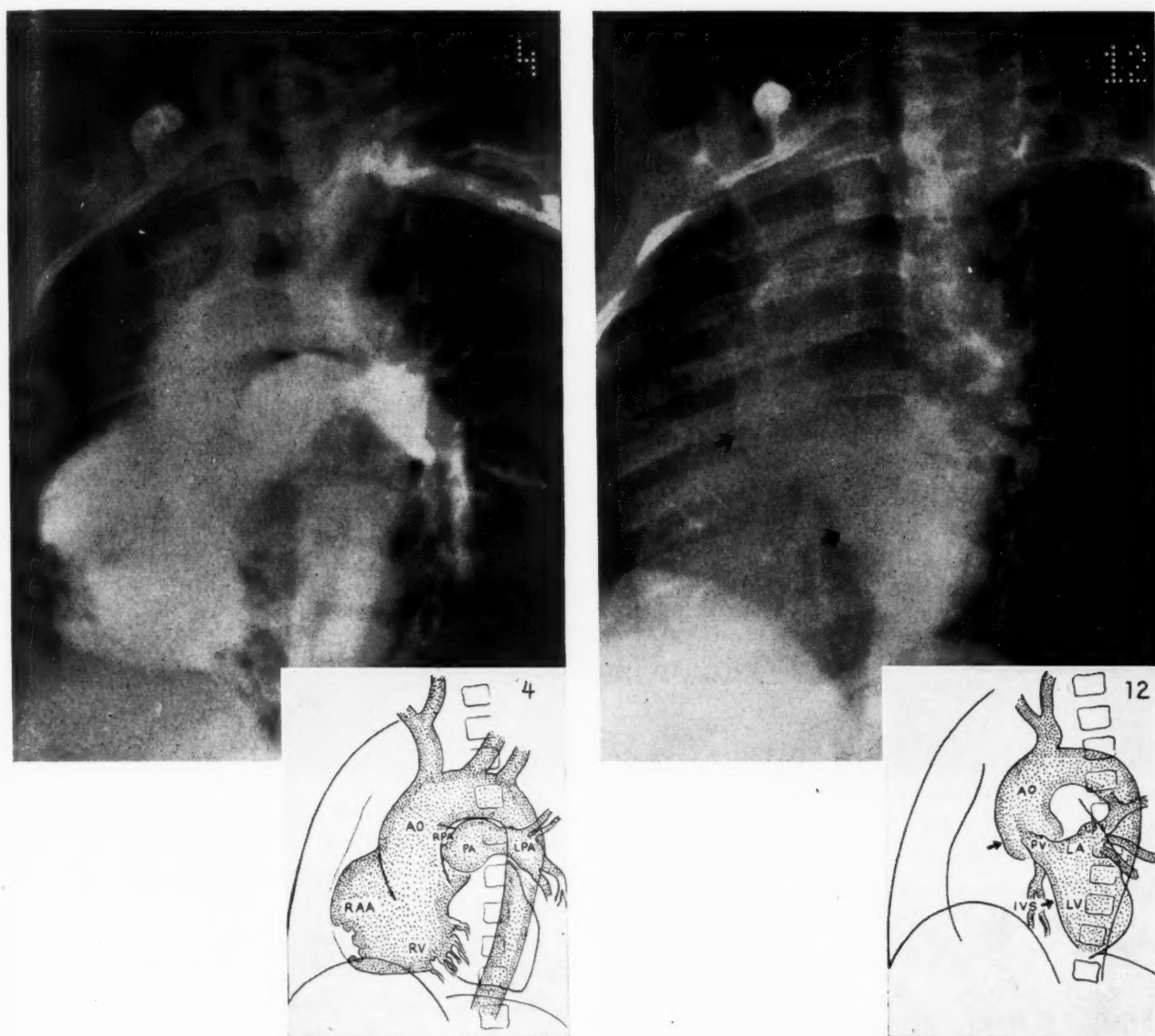


Fig. 5. Tetralogy of Fallot with left aortic arch. Left anterior oblique. Two films per second. Note simultaneous fill of aorta and pulmonary arteries from right ventricle (Film 4), eccentric position of aorta over interventricular septum (IVS) Film 12. Pulmonary stenosis not visible.

being obscured by the overlying vena cava and the base of the aorta. The absence of a normally developed right ventricular outflow tract and undivided pulmonary artery is indirect evidence of such stenosis. While the right and left pulmonary arteries are usually seen and may be of any size—large, small, or normal, the peripheral pulmonary arteries are always reduced in prominence and thereby give further evidence of reduced pulmonary blood flow. If another projection is used—the frontal, right anterior oblique or shallow left anterior oblique as in Figure 6, the stenosed outflow tract usually can be identified. Frequently, there is deformity of the junction of the right and left pulmonary arteries resembling a “bird’s wing” due

to shortening and underdevelopment of the undivided pulmonary artery.

Right ventricular hypertrophy can occasionally be seen by a thick unopacified wall of the right ventricle or abnormal convexity of the ventricular septum to the left. The right auricle is sometimes enlarged, but the left heart chambers are seen to be normal.

Important variations occur, and these have to do with the position of the aortic arch and the degree of pulmonary stenosis. In most cases, the arch of the aorta and great vessels are arranged normally. However, in 25 per cent, the aorta arches and descends to the right of the spine,² and the great vessels have a mirror arrangement (Fig.

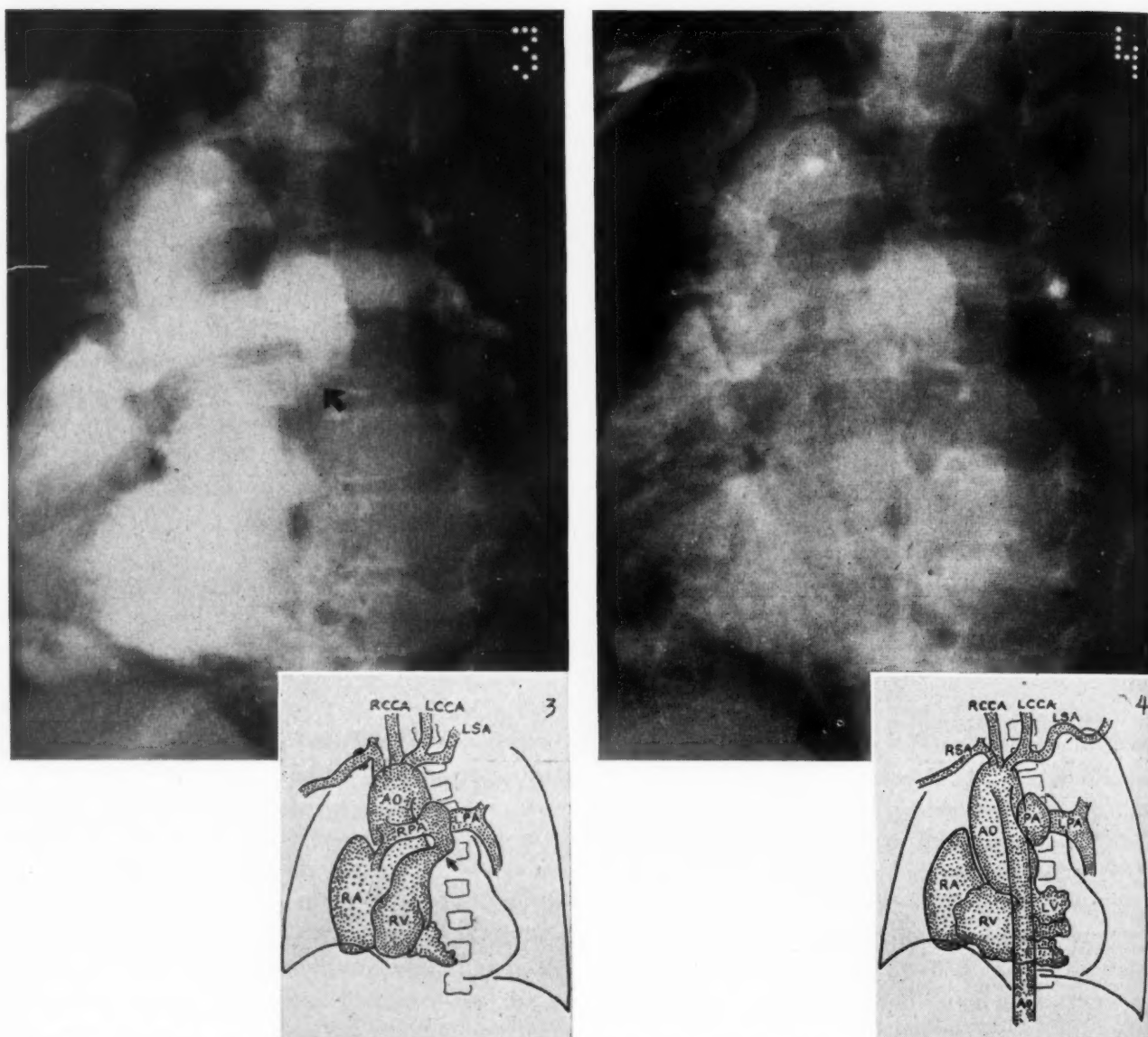


Fig. 6. Tetralogy of Fallot with right aortic arch. Shallow left anterior oblique. Two films per second. Note premature fill of aorta from right ventricle, pulmonary stenosis (arrow Film 3), right-sided aortic arch and descending aorta (Film 4).

6). Under this circumstance, the first vessel to arise from the aorta is the left innominate artery followed by the right common carotid and right subclavian. At times the origin of the great vessels vary considerably from these generally prevailing patterns.

Pulmonary stenosis may be extreme. In this circumstance, all the pulmonary vessels are diminutive and slow to opacify. If they cannot be visualized, complete occlusion (stresia) of some portion of the passage between right ventricle and the pulmonary arteries is suspected. This situation has been termed "pseudo-truncus arteriosus" by Taussig.¹⁸ Blood reaches the lungs from the aorta by way of enlarged bronchial arteries or through a patent ductus arteriosus. In this cir-

cumstance, the aorta is often of increased calibre.

Finally, one may find in association with the other components of the tetralogy of Fallot an auricular septal defect, the so-called "pentalogy." Here the left auricle is seen to fill from the right, demonstrating another pulmonary bypass.

With all these features, there is seldom any difficulty in recognizing tetralogy of Fallot from the angiogram. The same is true clinically for experienced cardiologists. However, the examination has been of diagnostic value in a few cases where preliminary clinical findings have not allowed differentiation of tetralogy of Fallot, pulmonary valvular stenosis with patent foramen ovale and true truncus arteriosus.

In addition, the angiogram provides the

surgeon with information regarding the size, position and length of the vessels which he will use for creation of an artificial ductus arteriosus. It is true that in most cases the position of the aorta can be accurately determined fluoroscopically. Occasionally, angiocardiology is needed for localization. The size of the right and left pulmonary arteries is important and is usually well shown. Their non-visualization in the angiocardiology, however, does not preclude the presence of vessels suitable for corrective surgery distal to an atretic segment. If they are not visible, there is a good possibility that one or both are minute. The operation is then of considerably greater risk. It is reassuring to the surgeon to know that suitable arteries are available for his use.

Pulmonary Valvular Stenosis with Intact Ventricular Septum

This is an anomaly, the frequency and importance of which had not been appreciated until the more recent intensive study of congenital heart disease. Here the obstruction to pulmonary blood flow most frequently lies in a stenosed pulmonary valve. Subsequent to this damming effect, right ventricular hypertension occurs which at times, in the absence of a communication with the left ventricle, may exceed, even double, the systemic blood pressure. This, of course, is accompanied by marked right ventricular hypertrophy. When this valvular stenosis is isolated, patients are not cyanotic because all the blood returning to the right auricle must pass through the lungs where it is fully oxygenated. Usually, they are not severely handicapped. But, as more often occurs, the foramen ovale is incompetent, and unoxygenated venous blood reaches the left auricle from an enlarged and hypertensive right auricle. This results in peripheral cyanosis. These patients are often more handicapped than those with tetralogy of Fallot. Corrective surgery is more properly and effectively, a pulmonary valvulotomy than the creation of an artificial ductus arteriosus.³ Thus, the importance of differentiating this lesion from tetralogy of Fallot is evident. This differentiation is sometimes possible clinically and radiographically.

The angiocardiology demonstrates enlarged right cardiac chambers, enlarged undivided pulmonary artery and main branches with diminutive peripheral arteries. Emptying of the right ventricle and pulmonary arteries may be delayed so that the

aorta will be seen before the pulmonary arteries empty. This simultaneous fill should not be taken as evidence of a left-to-right shunt in the presence of diminutive peripheral pulmonary arteries. The deformed valve itself has not been visible. The patent foramen ovale permits early fill of the left heart and aorta. This premature fill of the aorta does not indicate dextroposition of the aorta. In this case, the prematurely opacified left heart is the source of opaque material and not the right as in tetralogy of Fallot. If, as sometimes occurs, there is an auricular defect with tetralogy of Fallot, the differentiation of "pentology" and pulmonary stenosis with patent foramen ovale may be difficult. We erred in one case where in frontal view the early fill of the aorta suggested tetralogy. The importance of the visible normal right ventricular outflow tract and the premature fill of the left cardiac chambers was not appreciated. The patient did not survive a Blalock procedure for suspected tetralogy of Fallot and at autopsy proved to have pulmonary valvular stenosis and patent foramen ovale. A left oblique projection would have shown more adequately the premature fill of the aorta from the left heart. For this reason, we now employ this position for our initial angiocardiology in order to separate the two sides of the heart, though we realize we may not see the area of pulmonary stenosis to best advantage.

Tricuspid Atresia with Underdevelopment of the Right Ventricle

This anomaly is usually first seriously considered when a cyanotic infant or child shows left axis deviation on the electrocardiology. In the presence of tricuspid valve stenosis or atresia, the right ventricle is underdeveloped. All, or most, of the venous blood returning to the heart passes through an auricular septal defect to the left auricle and thence to the left ventricle. From here, it passes to the aorta and pulmonary arteries, reaching the latter via a small ventricular septal defect and hypoplastic right ventricle. Frequently, the pulmonary blood supply is reduced by subpulmonic stenosis and hypoplastic pulmonary artery. A patent ductus arteriosus or large bronchial arteries may, in part, compensate for this reduced pulmonary blood flow. In addition to the basic tricuspid valvular lesion, about one-third of the cases have transposition of the great vessels with the aorta arising from the right ventricle and pul-

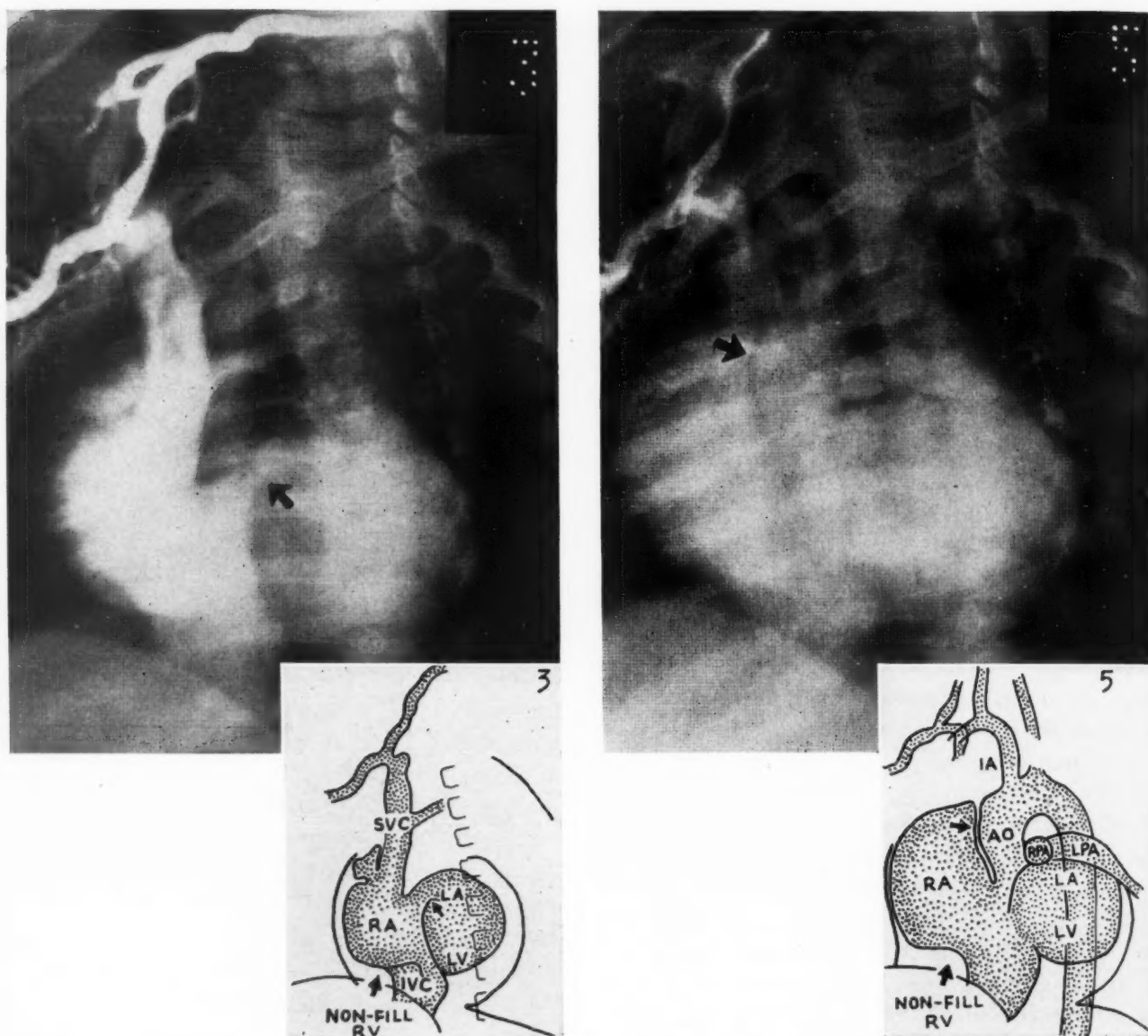


Fig. 7. Tricuspid atresia, hypoplastic right ventricle, pulmonary stenosis. Left anterior oblique, two films per second. Note large right auricle, auricular septal defect (arrow, Film 3), prompt fill of left heart, non-fill of right ventricle, normal position of aorta (arrow, Film 5), small pulmonary arteries. Autopsy confirmation.

monary artery from the left. Pulmonary blood flow may then be normal or increased, but sometimes it is reduced.

Operative palliation consists of creating an artificial ductus arteriosus, provided the auricular septal defect is large enough to supply both the peripheral and the added pulmonary circulations.

The angiocardiogram is distinguished by the immediate fill of the left auricle from the right and non-visualization of the right ventricle.⁶ This latter feature is shown in the left oblique projection in which contrast material does not overlie the right diaphragm, as is the case if the right ventricle fills (Fig. 7). Both the right auricle and left ventricle appear very large. Usually, the origin of

the aorta from the left ventricle is evident, but transposition may be visible. Pulmonary arteries have been small in the three cases we have examined, and their source of fill not apparent. The peripheral arteries of the lung are small.

It is reasonable to question the use of angiocardiography when the presence of left axis deviation in association with cyanosis makes the diagnosis quite certain. Again, it is the desire of our surgical colleagues to know the position of the aorta and the availability of the pulmonary arteries that prompt this study. Unless reduced pulmonary blood flow is accompanied by a large auricular defect, it is unlikely that the creation of an artificial ductus arteriosus would be recommended.¹⁶

Discussion

The single serious objection to angiocardiology in congenital heart disease is the well-documented danger of fatal reaction. Figures from the largest reported series indicate this occurs in approximately 1 per cent of cyanotic patients.¹⁵ It is significant that twenty-one of the twenty-three deaths attributed to angiocardiology collected by Dotter and Jackson,⁷ were in congenital cardiacs, and of these, seventeen had cyanotic heart disease. We have had one death in a cyanotic infant whose autopsy findings were aortic valve stenosis, hypoplastic ascending aorta and patent ductus arteriosus. Our group comprises 122 patients with congenital cardiovascular disease. Sixty-three of these had lesions causing cyanosis, and in these, seventy-five injections were used. The lethal potentiality of a diagnostic procedure should be given considerable respect, and the examination used only when the value of the information that may be gained justifies the risk. Multiple injections should be and can be avoided if one will be satisfied with a single projection. This is usually possible. In this regard, simultaneous biplane filming makes the most of one injection.¹

The possibility of predicting untoward reaction by preliminary testing has been studied by Dotter and Jackson.⁷ Apparently, this is not possible. Although we do regularly use the previously mentioned preliminary testing, we are not at all certain that these precautions are of more than legal protection. We have had two patients who showed no response to the preliminary test dose only to develop giant urticaria and severe angioneurotic edema immediately following the larger injection. In our one fatal case, preliminary testing was not provocative. If sensitivity to the contrast material is demonstrated, or if there is evidence of an allergic diathesis, the injection probably should be withheld. In most cases, serious reaction seems unpredictable. Probably, as Scott has suggested,¹⁵ this risk will be present until a safer contrast material is available.

Most patients find this procedure quite unpleasant, experiencing sudden intense warmth, weakness, and a headache lasting three to five minutes. Frequently, there is nausea and vomiting. Cyanosis may be intensified in previously cyanotic patients. Some degree of urticaria is not uncommon. Three patients have had alarming though transient bradycardia. Three others had temporary tachy-

cardia. The occurrence of such arrhythmias during the procedure has been recorded previously.¹¹

Sosman has stated that the objective of cardiac catheterization and angiocardiology should be to provide information that will allow accurate diagnosis in future patients by simpler means. Already these procedures have facilitated our early recognition of the lesions described in this paper. It does not seem too much to expect that in the future, they will find application only in unusual situations. This trend is already evident in our hospital.

For the present, the usefulness of angiocardiology seems to be inversely proportional to the experience and confidence of the diagnostic-therapeutic team—the pediatrician or internist, thoracic surgeon and radiologist. Many centers find little use for it now in preoperative appraisal. However, we continue to benefit from angiocardiology in some of the patients with cyanosis and others with coarctation, both in diagnosis and preoperative anatomic evaluation. The left-to-right shunts would appear to be more adequately diagnosed by cardiac catheterization.

Summary

1. The angiocardiological features of certain surgically correctible congenital cardiovascular lesions are presented.
2. This procedure has been of particular value in the diagnosis of lesions producing cyanosis.
3. By demonstrating the pathologic anatomy of the patient preoperatively, angiocardiology has facilitated the surgical planning in coarctation of the aorta and several types of cyanotic heart disease.
4. It has not been helpful in the differentiation of the patent ductus arteriosus from other lesions causing a left-to-right shunt.

References

1. Axen, O., and Lind, J.: Table for routine angiography, synchronous serial roentgenography in two planes at right angles. *J.A.M.A.*, 43:540 (June 10) 1950.
2. Blalock, A.: Surgical procedures and anatomic variations encountered in the treatment of congenital pulmonary stenosis. *Surg. Gynec. & Obst.*, 87:385, 1948.
3. Brock, R. C.: Pulmonary valvulotomy for the relief of congenital pulmonary stenosis. Report of three cases. *Brit. J. Surg.*, 1:1121 (June 12) 1948.
4. Burford, T. H., and Carson, W. J.: Visualization of the aorta and its branches by retroarterial diodrast injection. *J. Pediatrics*, 33:675 (Dec.) 1948.

(Continued on Page 1401)

Myocardial Infarction

A Study of the Acute Phase

By F. Janney Smith, M.D.
Detroit, Michigan

CORONARY ARTERY disease has increased in the past thirty years until it is now the most common type of heart ailment. This is especially true of coronary artery thrombosis with myocardial infarction. This is due partly to factors which have decreased death rates of infectious diseases, allowing a greater percentage of the population to reach age groups commonly afflicted with atherosclerotic circulatory diseases. Improved diagnostic facilities and a clinical awareness of the problem have also, to some extent, been responsible for this increase.

garding the various diagnostic and prognostic aspects of this disease. However, we shall present only the statistics which have been gathered from this study.

This represents a study taken from the general population of a busy industrial city, where many people live under stress of production-line working conditions and the pressure of working to meet deadlines is felt by all. These figures could be different than those from rural districts. Also, several nationalities are represented in the study.

The utilization of various clinical data, such as leukocyte counts, sedimentation rates, blood pressure changes, and the mental status of the patient, as prognostic signs, have been stressed in the literature. Because many of our patients were seen first on different days from the onset of symptoms (from the first day to two weeks), we found it difficult to correlate some of these

TABLE I

Sex	Location of Infarction	Received No Anticoagulants		Received Anticoagulants	
		Total	Deaths	Total	Deaths
Male 749 Cases	Anterior	353	92 (26.0%)	88	10 (11.3%)
	Posterior	234	46 (19.6%)	60	7 (11.6%)
	Unknown	11	6 (54.5%)	3	1 (33.3%)
	Total	598	144 (24.0%)	151	18 (11.9%)
Female 171 Cases	Anterior	74	30 (40.5%)	23	6 (26.0%)
	Posterior	56	10 (17.8%)	15	3 (20.0%)
	Unknown	3	3 (100%)	0	0 (0.0%)
	Total	133	43 (32.3%)	38	9 (23.6%)
Total Both Sexes		731	187 (25.4%)	189	27 (14.2%)

Mortality as Related to Sex and Location of Infarction. Comparison of Patients Receiving Anticoagulants with Those Receiving No Anticoagulants.

We are presenting 920 cases of acute myocardial infarction from the records of the Henry Ford Hospital, covering the period from 1925 to May 1, 1949. The cases were selected from 2,024 cases indexed as coronary thrombosis with myocardial infarction, covering this period. Cases were selected to fulfill the criteria of follow-up for six weeks from onset of the condition. Only those cases were used which were objectively diagnosed from either (1) clinical course and electrocardiographic study or (2) demonstration at autopsy of recent myocardial infarction.

Many reports ^{2,4,5,8,9,14,17} have been made re-

Presented at the Second Annual Heart Day of the Michigan Heart Association, Detroit, Michigan, March 17, 1951.

From the Division of Cardiology, Department of Medicine, Henry Ford Hospital.

This work has been supported equally by the Michigan Heart Association and the American Heart Association.

TABLE II. MORTALITY RATES

Decade	Male Cases	Mortality	Female Cases	Mortality
3rd	2	0	0	0
4th	34	4 (11.8%)	2	0
5th	154	33 (21.4%)	20	2 (10%)
6th	290	52 (17.9%)	53	19 (35.8%)
7th	186	58 (31.2%)	71	24 (33.8%)
8th	69	18 (27.5%)	25	8 (32%)
9th	8	4 (50%)	1	0

features with the eventual outcome of the case. However, there were many factors elicited by history and physical examination, which we wish to discuss either as playing a contributing role in the cause of the attack or as a contributing influence on the eventual outcome. There are complications which arose during the course of illness which we shall consider as to their influence on the individual case. We shall also discuss the management of these complications.

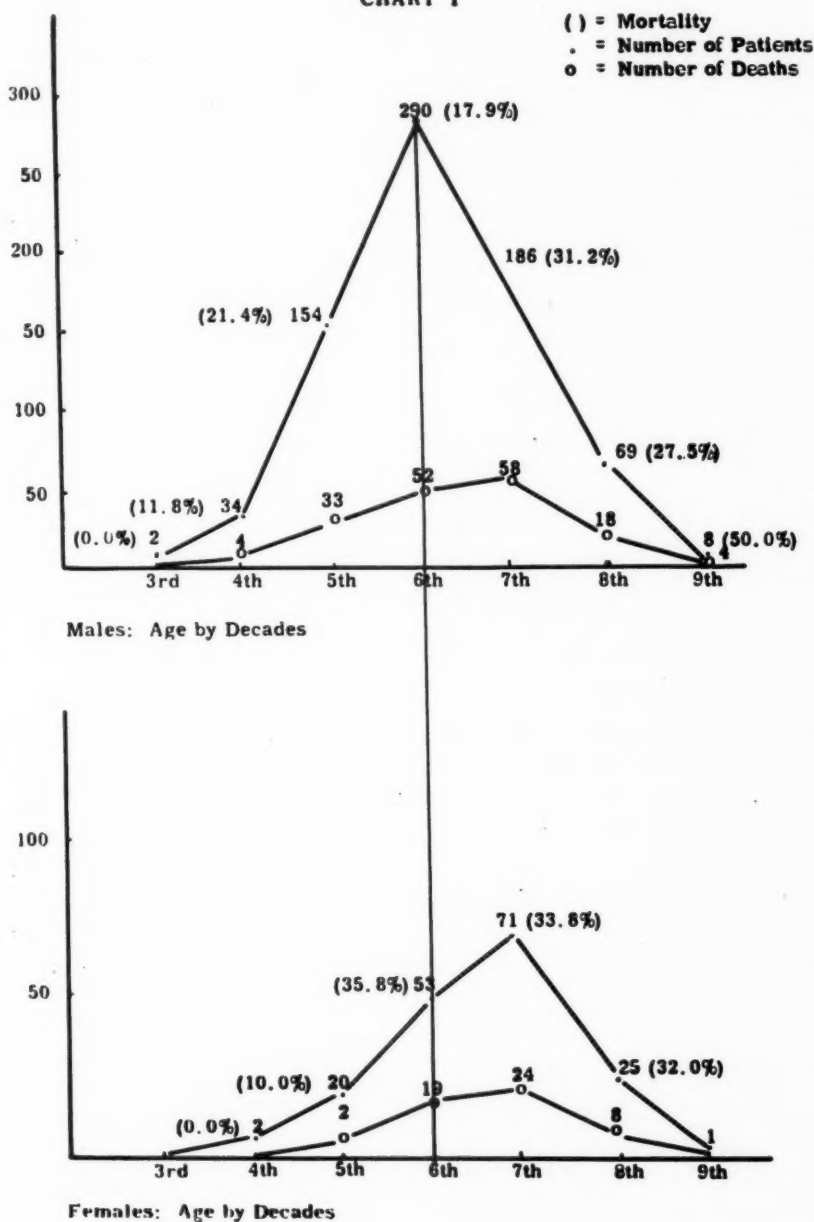
JMSMS

MYOCARDIAL INFARCTION—SMITH

Table I lists the total number of cases according to sex, location of the infarction, and whether the patient received anticoagulants. Among these 920 cases there were 214 deaths, an overall mortality rate of 23.2 per cent.

females was somewhat higher than that for the males. On an average the females were older than the males at the time of death. There were 61 per cent of the females and 49 per cent of the males beyond age sixty. Other authors found

CHART I



Age and Sex Distribution

This series comprises 749 males and 171 females, a ratio of 4.4 males to one female. In the series of Billings, et al,² from Nashville, the ratio of males was 2.7 to one female. Chambers⁴ in New York, and Mullins¹⁰ in Pittsburgh had ratios of three males to one female. Mintz and Katz⁹ in Chicago, gave a figure of 2.2 males to one female, and Parkinson and Bedford¹³ had thirteen males to one female. The mortality rate for the

essentially this same sex difference. Mintz and Katz⁹ series reported the females' average age as 63.4 years, and the males' 59.6 at the time of death.

Tabulation of the patient's age at the onset, revealed that women were somewhat older at the time of their initial attack. In most males, the initial attack occurred in the 6th decade, whereas in females the onset was not until the 7th decade.

Other series^{2,4,8,9,10} have shown that the females

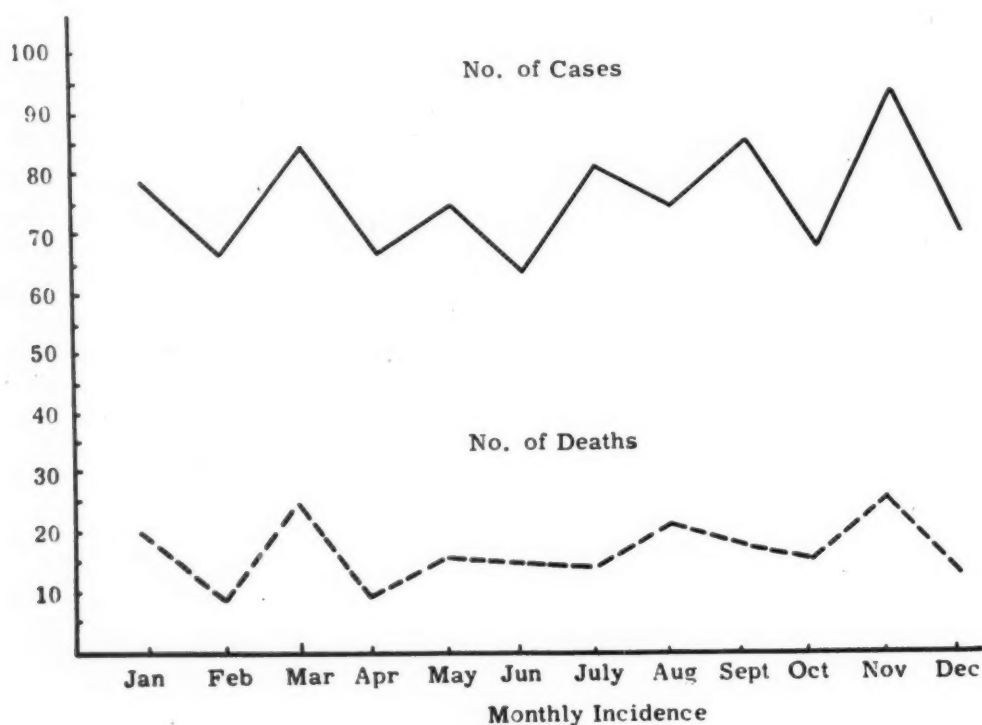
MYOCARDIAL INFARCTION—SMITH

were on an average from three to six years older than the males, at the time of the onset of their illness. There were only two women below age forty, both of whom survived their attack. There were thirty-four men less than forty years of

Occupation

In this series 34.2 per cent were in the laboring group, 18.0 per cent unskilled labor and 16.2 per cent skilled labor. Housewives made up 21.6 per cent of the total. Business, professional and exec-

CHART II



age; two men were less than thirty, one being twenty-four. The mortality rates in the various decades of life are shown in Table II.

Chart I shows the relative incidence and mortality of both sexes. Both sexes show similar mortality rates after the 6th decade. The mortality rate in the females in the 6th decade was strikingly higher than that of the males. The number of attacks occurring in the males was the greater.

Seasonal Incidence

In Chart II the monthly incidence and number of deaths are charted. No definitely significant peaks appear except in November and only a slight increase above the average then. There is a fairly even distribution throughout the year. The greatest mortality peaks occurred in March and November, and seemed to parallel the number of cases each month.

utive men made up 28.8 per cent of the total; salesmen 6.6 per cent, retired 4.8 per cent, unemployed 2.4 per cent, and farmers 1.2 per cent.

History and Physical Examination

In Table III are tabulated factors obtained from the history and physical findings of these patients.

Hypertension

Hypertension existed in 36.8 per cent of the men and 67.2 per cent of the women. Many other authors have reported approximately the same incidence. In Mintz and Katz¹⁰ large series, 35.9 per cent of the patients had hypertension. In Masters¹¹ somewhat smaller series 69 per cent of the patients had hypertension. Its incidence is much greater in women than in men in most series. However, many authors have concluded that the factor of hypertension had no influence on the immediate mortality. As seen in Table

MYOCARDIAL INFARCTION—SMITH

TABLE III. ETIOLOGICAL FACTORS—AGE, SEX AND MORTALITY BY DECADES

Decade of Life	3rd	4th	5th	6th	7th	8th	9th	Total
Hypertension								
36.8% Male	1	8	54	109	80	20	4	276
Deaths	0	1	8	16	22	7	2	59 (21.3%)
67.2% Female	0	1	13	37	47	17	0	115
Deaths	0	0	1	10	15	3	0	29 (25.2%)
Angina Pectoris								
47.7% Male	0	1	66	153	105	29	3	357
Deaths	0	1	9	33	25	8	1	77 (21.5%)
53.8% Female	0	2	8	28	39	15	0	92
Deaths	0	0	1	6	12	5	0	24 (26.0%)
Obesity								
28.1% Male	1	13	41	84	59	12	1	211
Deaths	0	0	3	7	11	1	0	22 (10.4%)
52.6% Female	0	1	11	38	31	9	0	90
Deaths	0	0	0	10	13	3	0	26 (28.8%)
Diabetes								
8.4% Male	1	2	11	28	17	4	0	63
Deaths	0	0	1	5	6	0	0	12 (19.0%)
20.4% Female	0	0	2	13	13	7	0	35
Deaths	0	0	0	4	3	1	0	8 (22.8%)
Previous Myocardial Infarct								
14.5% Male	0	3	21	41	34	10	0	109
Deaths	0	1	11	11	12	1	0	36 (33.0%)
9.4% Female	0	0	1	9	6	0	0	16
Deaths	0	0	0	1	2	0	0	3 (18.7%)
Silent								
Male	0	0	4	2	6	1	0	13
Female	0	0	1	0	0	0	0	1
Syphilis								
Male	0	1	3	4	5	2	0	14
Female	0	0	0	0	0	0	0	0

III, our statistics bear this out. The mortality rate for the males with hypertension was 21.3 per cent, and the mortality rate for the females with hypertension was 25.2 per cent.

Angina Pectoris

Angina pectoris occurred in 47.7 per cent of the men and 53.8 per cent of the women. From the statistics of this series, its presence seemed to have no effect on the mortality rate. There were 357 males with angina pectoris with seventy-seven deaths; a mortality rate of 21.5 per cent. Ninety-two females had angina pectoris with twenty-four deaths; a mortality rate of 26.0 per cent. Site of the infarction in those with antecedent angina was in the same proportion as it appeared in the study as a whole. Mintz and Katz⁹ found it equally common in the two sexes; 72.9 per cent of their patients had antecedent history of angina pectoris. The mortality rate in their series was 23.3 per cent for men, and 28.0 per cent for women.

Many of the cases in this series had the onset of pilot attacks of angina varying from a few days to a few weeks prior to the onset of their myocardial infarction. This is tabulated in Table IV. One hundred and eight males had angina pectoris of less than one month's duration, and twenty-one

TABLE IV. ANGINA PECTORIS RELATION TO INFARCTION DURATION

Sex	1 week	2 weeks	3 weeks	4 weeks	1 to 6 months	Over 6 months
Male	36	27	14 Total	31 108	72	184
Female	6	7	2 Total	8 21	15	52

females had angina of less than one month's duration; a total of 139 cases for the series; or, an incidence of 15.1 per cent. The mortality rate of this group, however, was no greater than the mortality rate of the group who had angina of longer standing. Because this pattern was found so frequently, thirty-nine patients who had developed angina pectoris abruptly and frequently have been hospitalized for a two-week period and given dicumarol during that time. Thirty-two of these were relieved of their attacks of pain. Two patients proceeded to develop myocardial infarction in the course of anticoagulant therapy in spite of well-controlled prothrombin times. Six patients went on to develop myocardial infarction after stopping the anticoagulant, three in the first week after the drug was discontinued.

It is difficult to draw conclusions from this group because of the lack of a similar control series without anticoagulant therapy. But it does seem that patients with "pilot" angina have a strong tendency to progress to recognizable myocardial infarction. Again the occurrence of three of these instances within the first week after stopping the anticoagulant suggests that if this therapy is begun with such a patient, it should be continued for a somewhat longer period, perhaps a month or six weeks, or longer, and its administration then tapered off, since abrupt discontinuance at the end of two weeks may remove a needed protection or perhaps account for a rebound effect on the clotting mechanism. A similar study of this character was reported by Nichol, in the *Southern Medical Journal*, July, 1950.¹²

Obesity

This factor occurred in 28.1 per cent of the men, and 52.6 per cent of the women. There were twenty-one cases of obesity in the males with twenty-two deaths; a mortality rate of 10.4 per cent. It occurred ninety times in the female group with twenty-six deaths; or a mortality rate of 28.8 per cent. Billings, et al,¹ state that the im-

mediate mortality of the obese patients in their group was 32 per cent, for patients of average weight 39 per cent, and for the underweight group 60 per cent. The actual mortality rate for

it would seem that a previous myocardial infarction added considerably to the gravity of a new infarct in the male.

Syphilis

Syphilis was found in only 1.8 per cent of this series. In only one patient was it proven to be a definite etiological factor in his illness. This patient was thirty-eight years old, a colored man, who, at autopsy, had marked narrowing of the coronary ostia secondary to luetic involvement of the aorta.

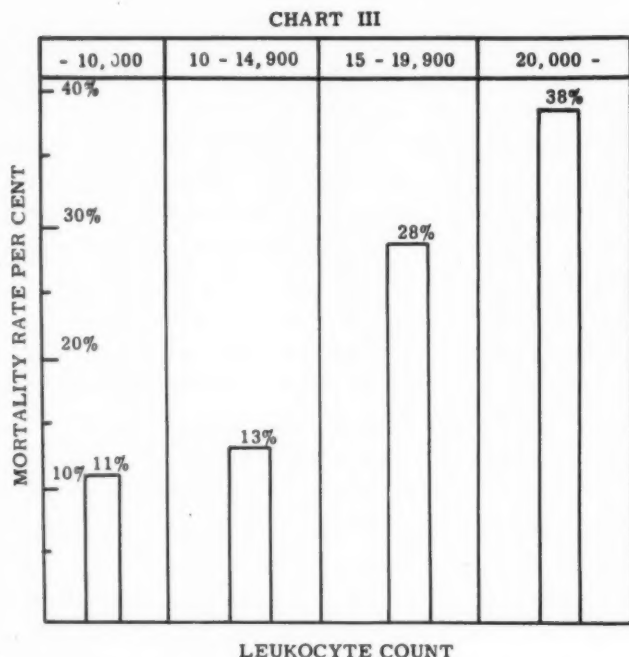
Silent myocardial infarctions are extremely rare. There were fourteen cases in this series. Mintz and Katz⁹ found eighteen cases of silent myocardial infarction in their series of 572 cases. It did not seem to influence the mortality rate in our series.

Precipitating Factors

Masters⁷ is of the school that accepts no cause except shock, or shock-like states as direct precipitating factors in coronary artery occlusion. In coronary insufficiency, however, he finds that there are etiological factors. These are increased cardiac work, diminished coronary flow and impaired oxygenation of the blood (usually occurring in combination). Either coronary occlusion or coronary insufficiency may result in acute myocardial infarction.

A history of onset occurring during the usual routine of day-to-day life was obtained in the majority of these cases. Possible precipitating factors occurred in sixty cases, an incidence of 6.5 per cent. These included such activities as strenuous physical exertion, bowling, driving an automobile, following a heavy meal, emotional crises, while hospitalized, postoperative, massive hemorrhage, diabetic acidosis, chest trauma, the use of Pitocin, bronchograms and venipuncture. The majority of cases in this series occurred during ordinary routine daytime activity, or while at rest either awake or during sleep.

Several disease states were found coincident to the attack, as follows: eight cases of cerebral vascular accident, eleven cases of gall-bladder disease, six cases of peptic ulcer, six cases of uremia, three cases of gout, three cases of pneumonia and three of pulmonary emphysema, two of myxedema, two cases of hyperthyroidism, five cases of carcinoma, one case of acute fibrinous pericarditis which followed pneumonia, two cases of polycy-



obese patients in this series is below the overall mortality rate for both sexes, and seems in keeping with the figures just stated.

Diabetes Mellitus

This condition was found in 8.4 per cent of the men and 20.4 per cent of the women in this series. No significant difference in the mortality rates of the diabetics and nondiabetics was found. There were sixty-three cases in the male group with twelve deaths; a mortality of 19.0 per cent; thirty-five cases amongst the female group with eight deaths; a mortality of 22.8 per cent. Other authors^{8,9} have concluded that diabetes mellitus added considerably to the gravity of the prognosis in women. The figures from this series do not bear this out.

Previous Myocardial Infarction

This condition occurred with an incidence of 14.5 per cent in the males and 9.4 per cent incidence in the females. There were 109 men with previous myocardial infarctions with thirty-six deaths, or a mortality of 33 per cent. Sixteen women in this series had previous myocardial infarctions with three deaths occurring; a mortality rate of 18.7 per cent. From these figures,

themia vera, and one case of pernicious anemia. Rheumatic heart disease was found in eight cases, and a history of pre-existing congestive heart failure was obtained in twenty-eight cases.

Leukocyte Count

The mortality rate seemed to rise in proportion to the leukocyte count, as it has been reported by other observers.^{2,4,14} This is tabulated in Chart III; 11 per cent mortality occurred in the 10,000 and below group, a 13 per cent mortality in 10,000 to 15,000; 28 per cent in the 15,000 to 20,000; and a 38 per cent mortality rate when over 20,000.

Site of Infarction

The majority of the myocardial infarctions in this series occurred in the anterior wall of the left ventricle. There were 538 anterior infarctions, and 365 posterior infarctions. The mortality rate for the anterior group was 25.7 per cent and for the posterior group 18.1 per cent.

Table I breaks this down further as to the influence of sex and whether anticoagulants were received. There were 353 males with anterior myocardial infarctions with ninety-two deaths; a mortality rate of 26 per cent in the group which did not receive anticoagulants, as compared to seventy-four cases of anterior infarction in the female with thirty deaths, a mortality rate of 40.5 per cent.

Posterior myocardial infarction occurred 234 times in the male group that did not receive anticoagulants with forty-six deaths, a mortality of 19.6 per cent, as compared to fifty-six cases in the female group with ten deaths, or 17.8 per cent mortality.

In the group receiving anticoagulants there were eighty-eight males with ten deaths, a mortality rate of 11.3 per cent, in the anterior myocardial infarction group; and twenty-three cases of anterior myocardial infarction in the female group with six deaths, a mortality rate of 26 per cent. Posterior myocardial infarction involving sixty men, occurred in this group with seven deaths, a 11.6 per cent mortality; and fifteen women had posterior myocardial infarctions, with three deaths, or 20 per cent mortality.

The mortality rate differs with the site of the infarction. It was higher in the group of anterior infarcts occurring in females. There was little sex difference in the posterior group with or without

anticoagulants. Various complications of acute myocardial infarction will be discussed under a separate heading revealing their relationship to the site of the infarct.

Other series indicating anterior infarction to be more serious are Vander Veer and Brown,¹⁷ Stroud,⁶ and Wood, et al.²⁰ No significant difference in mortality in anterior and posterior infarctions was reported by Billings,¹ Master, et al.,⁸ Williams,¹⁹ Barnes and Ball,¹ and Levine and Brown.⁵ From statistics alone Mintz and Katz⁹ series suggests that posterior infarction has a more serious outlook.

Thromboembolic Complications

Table V shows the day and the week of thromboembolic complications. This is broken down into the different sexes and site of occurrence. The occurrence of fifty-eight in the first week and forty-nine in the second week, represent the peak numbers. This represents 34.9 per cent of the total for the first week and 29.5 per cent for the second week. The numbers rapidly diminish after this period. The large numbers which occurred during the first week of illness, especially the first three and four days, would indicate the rationale of starting anticoagulants promptly to combat the early occurrence of these conditions.

However, a comparison of myocardial infarction cases in our series receiving dicumarol alone with those given heparin initially as well, did not reveal any advantage for the latter group in the avoidance of thromboembolic complications. The fact that no such complication occurred in the first week among 142 cases treated with dicumarol alone in spite of the well-known lag of forty-eight to seventy-two hours in arriving at a prothrombin time of thirty to thirty-five seconds, suggests that in spite of this lag dicumarol probably has an appreciable immediate anticoagulant effect prior to the development of the usually regarded effective prothrombin level of thirty to thirty-five seconds.

The breakdown as to site of thromboembolic complications indicates, as has been the case in most series, that the majority of these lesions are pulmonary infarctions; thirty-two cases of pulmonary infarction occurred in the first week, twenty-one the second week, and sixteen the third week, with a rapidly diminishing number in the fourth, fifth and sixth weeks. When symptoms and signs of coronary occlusion recurred without evidence of

MYOCARDIAL INFARCTION—SMITH

TABLE V. BREAKDOWN OF THROMBO-EMBOLIC COMPLICATIONS

Days		1	2	3	4	5	6	7	8	9	10	11	12	13	14	3rd wk.	4th wk.	5th wk.	6th wk.	Total
Pulmonary Infarction	M	—	3	5	3	5	3	3	4	4	2	2	3	1	2	13	4	4	4	—
	F	—	—	2	3	2	2	1	1	—	1	—	1	—	—	3	1	—	—	—
Total Days		—	3	7	6	7	5	4	5	4	3	2	4	1	2	16	5	6	—	—
Total Weeks		—	—	—	—	—	—	32	—	—	—	—	—	—	21	16	5	6	4	84
Cerebral Embolus	M	—	1	1	—	1	—	3	1	1	—	1	—	1	—	2	1	—	2	—
	F	—	—	1	—	1	—	—	—	—	—	1	—	—	—	1	—	—	—	19
Phlebitis	M	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	1	—
	F	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	5
Mesenteric Embolus	M	—	1	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
	F	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Emboli to Extremities	Popliteal	—	—	1	—	—	—	—	—	1	—	—	1	1	—	—	1	1	—	—
	Femoral	—	1	—	—	—	—	—	—	—	—	1	—	—	—	2	—	—	—	—
Splenic Infarct	Brachial	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
	Iliac Saddle	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	13
Renal Infarct		—	1	2	1	—	—	—	1	—	—	—	—	—	1	1	1	1	1	8
Extensions Primary	M	—	—	1	2	2	—	—	—	1	4	3	—	—	2	4	5	1	1	—
	F	—	—	—	1	—	—	—	—	—	—	—	—	—	—	2	—	—	—	29
New Area	M	—	—	—	1	—	—	—	—	—	—	1	1	1	1	—	—	—	—	—
	F	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	7
Total		1	8	14	11	11	6	7	7	8	7	9	7	5	6	30	17	10	10	174
								58	1st week						49	2nd week				

TABLE VI. THROMBOEMBOLIC COMPLICATIONS: MORTALITY

Sex	No. Cases	No. Deaths	Mortality %
Male	114	48	42.17%
Female	28	12	42.9%
Total	142	60	42.2%

*Of a Total of 731 cases Receiving no Anticoagulants, 142 Patients had Thromboembolic Complications (19.4% incidence). These 142 patients had a total of 166 Thromboembolic Episodes.

electrocardiographic changes in a new area, the cases were classified as an extension of the primary infarction. When new electrocardiographic changes occurred, they were classified as extensions in a new area.

In Table VI are tabulated the mortality rates associated with thromboembolic complications as to sex. In this group there were a total of 731 patients who received no anticoagulants. Of these, 142 patients had thromboembolic complications, a 19.4 per cent incidence. There were a total of 174 thromboembolic episodes. In that group of patients having thromboembolic complications, there occurred a mortality of 42.2 per cent as compared to a 19.8 per cent mortality in the group that did not have thromboemboli.

There were 189 cases that received anticoagulants. Fifteen of these patients had thromboembolic episodes, an incidence of 7.9 per cent, as compared to the 19.4 per cent incidence in the group that did not receive anticoagulants. In the group that received anticoagulants, there

were eight cases that had a thromboembolic episode before anticoagulants were started. These are not included in the total number of thromboembolic complications. However, seven had thromboemboli occur after the anticoagulant was stopped, and these are included.

Referring back to Table I there was a total of 151 cases in the males with eighteen deaths, a 11.9 per cent mortality, in the group receiving anticoagulants. There was a total of thirty-eight cases with nine deaths, an over-all mortality of 23.6 per cent, in the females that received anticoagulants; a total of 189 cases in both sexes with twenty-seven deaths, an over-all mortality of 14.2 per cent, for the group receiving anticoagulants.

The incidence of thromboemboli in the series of Mintz and Katz⁹ was 9.9 per cent. This group had a mortality rate of 55.8 per cent. Nay and Barnes¹¹ encountered thromboemboli in thirty-seven of 100 consecutive patients.

Arrhythmias

An arrhythmia occurred in some form in 16.3 per cent of the total group.

Extrasystoles were encountered more frequently than in any other arrhythmia. However, we doubt that the figures presented here represent the true incidence of this arrhythmia. It probably occurs much more frequently than the figures indicate. However, in the patients with extrasystoles the mortality rate was higher than for the group as

MYOCARDIAL INFARCTION—SMITH

TABLE VII. PREMATURE BEATS

Type	Total No. Cases	Total No. Deaths	Mortality Per Cent
Nodal	1	0	0
Auricular	7	1	14.3%
Ventricular	63	23	36.5%
No Quinidine	26	10	38.4%
Quinidine	37	13	35.1%
Total	71	24	33.8%
Incidence 7.7%			

a whole. Table VII shows the incidence and the number of deaths broken down for nodal, auricular and ventricular extrasystoles.

In the sixty-three cases in which ventricular extrasystoles occurred, there were twenty-three deaths, a mortality rate of 36.5 per cent. There was one death in the seven cases having auricular extrasystoles. Nodal extrasystoles were recorded in one case.

There were twenty-six patients having ventricular extrasystoles that did not receive quinidine. Ten deaths occurred, a mortality rate of 38.4 per cent.

There were thirty-seven cases of ventricular extrasystoles that received quinidine. There were thirteen deaths in this group, a mortality rate of 35.1 per cent. This does not represent any favorable change in mortality in the group receiving quinidine.

There was a total of seventy-one cases in the whole series in which premature beats were recorded, an incidence of 7.7 per cent with twenty-four deaths, or 33.8 per cent mortality. This suggests that the occurrence of extrasystoles has importance as far as the mortality rate is concerned. The frequency of their occurrence needs much closer checking, and the use of quinidine as a prophylactic measure following the appearance of premature beats needs further evaluation.

The appearance of an arrhythmia, other than premature beats, is generally regarded to be more serious than premature beats, and in this series did affect the mortality rate appreciably. The males having these arrhythmias had an over-all mortality of 30.3 per cent. The females had a mortality of 53.8 per cent. These figures are recorded in Table VIII. In such patients encountered by Mintz and Katz,⁹ the mortality rate was 43.6 per cent for the group and 66.7 per cent for the females of that group.

Auricular fibrillation was seen more often than the other arrhythmias. This arrhythmia occurred

TABLE VIII

Sex	Type of Arrhythmia	No. Cases	No. Deaths	Mortality %
Male	Auricular Fibrillation	34	9	26.5%
	Ventricular Tachycardia	12	7	58.3%
	Complete Heart Block	10	5	50.0%
	Nodal Tachycardia	3	1	33.3%
	Auricular Flutter	4	0	0.0%
	Auricular Tachycardia	3	0	0.0%
Female	Auricular Fibrillation	10	5	50.0%
	Ventricular Tachycardia	1	1	100.0%
	Complete Heart Block	1	1	100.0%
	Nodal Tachycardia	1	0	0.0%

TABLE IX. AURICULAR FIBRILLATION CONVERSION AND MORTALITY

	Anterior	Posterior	Unknown
Total	20	20	4
Deaths	4	8	2
Conversion			
Spontaneous	4	8	1
Digitalis	4	4	2
Quinidine	2	2	0
Quinidine and Digitalis	3	0	0
Failed to Convert (received Digitalis)	6	4	1
Failed to Convert (no Digitalis)	1	2	0

forty-four times in this series and is covered in Table IX showing the effects of the various combinations of digitalis and quinidine used in the therapy of this arrhythmia.

There were twenty cases each in the anterior and posterior groups. Four cases occurred in the unknown group. The incidence appears to be greater in the posterior group as there was a smaller number of this type of infarction. Fourteen deaths occurred, a mortality of 31.8 per cent. Of sixteen cases receiving neither digitalis or quinidine, thirteen converted to sinus rhythm spontaneously. Twenty-eight cases received digitalis or quinidine, or a combination of the two, in an effort to effect conversion to sinus rhythm. Ten cases converted with digitalis alone, four with quinidine alone, and three with quinidine and digitalis. Eleven cases received digitalis and failed to convert. Digitalis alone was not given for the purpose of converting the arrhythmia to normal, but to control the rate or because the patient was in congestive heart failure. The majority of the cases having auricular fibrillation occurred during the first week of illness (Table X).

Ventricular tachycardia was demonstrated by

MYOCARDIAL INFARCTION—SMITH

TABLE X. AURICULAR FIBRILLATION PERIOD OF ONSET

Day	1	2	3	4	5	6	7	2nd wk.	3rd week	4th week	5th week	6th week
Number	13	3	7	4	4	2	5	4	0	1	1	0
Total 1st week 38								4	0	1	1	0

TABLE XI. VENTRICULAR TACHYCARDIA 13 PATIENTS

Type	Deaths	Recovered	Total	Day of Onset	1	2	3	4	5	6	7	14	15	16	17	18
Anterior	6	3	9	Total	5	3	1	0	2	0	0	0	1	0	0	1
Posterior	1	2	3													
Unknown	1	0	1													

TABLE XII. CONGESTIVE FAILURE 156 PATIENTS. PERIOD OF ONSET

Day	1	2	3	4	5	6	7	1st wk.	2nd	3rd	4th	5th	6th	Unknown
Anterior	30	6	6	4	10	6	4	—	14	9	1	1	0	8
Posterior	8	5	5	4	3	4	2	—	9	1	2	1	1	1
Unknown	5	0	0	1	0	1	1	—	0	2	1	0	0	0
Total	43	11	11	9	13	11	7	105	23	12	4	2	1	9
Death*	10	13	8	6	10	11	3	61	20	5	3	0	0	0

*Day of death regardless of time of onset

MORTALITY CONGESTIVE FAILURE

Sex	Total	Deaths	Mortality
Male	130	74	56.9
Female	26	15	57.7

electrocardiograph on thirteen occasions. It occurred most often during the first five days of illness. Both of the two patients in whom the arrhythmia occurred on the fifteenth and eighteenth days from onset had received digitalis shortly before the arrhythmia appeared.

The high mortality rate associated with ventricular tachycardia is evident from Table XI. In only one instance was spontaneous conversion to sinus rhythm recorded. In more recent cases we have been more vigorous in our therapy with quinidine both orally and parenterally, and seemingly have been more successful in stopping these attacks. Table XI shows the extremely high mortality rate associated with this arrhythmia, there being nine cases of anterior myocardial infarction with six deaths and three posterior myocardial infarctions with one death. It occurred once in an unknown type with death occurring in this case. An over-all mortality rate of 61.5 per cent is recorded in patients with this arrhythmia.

Congestive Heart Failure

This condition occurred in 156 of the cases of this series, an incidence of 16.9 per cent. The appearance of congestive heart failure following

acute myocardial infarction is ominous. The mortality rate for the complication was about the same for both sexes; 56.9 per cent for the males and 57.7 per cent for the females. Table XII concerns 156 patients with this complication; 66 per cent of them, 61 cases, occurred during the first week of illness. The mortality rate was particularly high in those having the onset of their congestive failure during the first week of illness, although many did not die until the second week of illness.

Digitalis was used in the patients most seriously ill of congestive failure. Many of those who were in failure of mild degree were treated by restricting the sodium intake, and giving ammonium chloride and mercurial diuretics. However, in the group that did receive digitalis which undoubtedly were the more seriously ill, it seemed to influence the outcome favorably when compared with those having no digitalis (Table XIII).

There was a total of fifty-seven cases that did not receive digitalis with thirty-seven deaths, a 64.9 per cent mortality; and ninety-nine cases that did receive digitalis with fifty-three deaths, a 53.5 per cent mortality. Of the 538 anterior myocardial infarctions, ninety-eight had congestive failure, an incidence of 18.2 per cent. Of the 365 cases of posterior myocardial infarction, forty-seven had congestive failure, an incidence of 12.8 per cent. There were seventeen unknown types of myocardial infarction with congestive failure occurring in eleven, a 64.7 per cent inci-

MYOCARDIAL INFARCTION—SMITH

TABLE XIII. CONGESTIVE FAILURE

	No Digitalis		Digitalis		Total with Failure	Total No. of Cases	O/O with Congestive Failure
	Total	Deaths	Total	Deaths			
Anterior	38	23 (60.5%)	60	30 (50.0%)	98	538	18.2%
Posterior	14	10 (71.4%)	33	19 (57.5%)	47	365	12.8%
Unknown	5	4 (80.0%)	6	4 (66.6%)	11	17	64.7%
Total	57	37 (64.9%)	99	53 (53.5%)	156	920	16.9%

dence. The high incidence of congestive failure occurring in this group is explained by the fact that many who had unknown sites of infarction, had a left bundle branch block, which would indicate a serious conduction defect and the existence of rather extensive heart disease.

Ventricular Rupture

Ventricular rupture was encountered in eight cases. The day of occurrence of the rupture, and the presence or absence of angina pectoris preceding it is tabulated in Table XIV. One patient had a history of previous infarction one year prior to his terminal illness. In no other instance was there a history of angina pectoris of longer than four weeks' duration. Wessler, Schlesinger, and Zoll¹⁸ have emphasized that individuals having myocardial rupture are relatively free of antecedent coronary disease and unprepared for injury. They also observed that these patients had a significantly higher incidence of, (1) sustained hypertension during infarction, and (2) unusual effort during the last twenty-four hours of life.

Anticoagulant Drugs

Since anticoagulant therapy now occupies a prominent place in the treatment of myocardial infarction, it is thought appropriate to give here some detailed account of our employment of these drugs as well as our point of view concerning their use in the treatment of this condition. The larger part of our experience with this form of therapy has been gained with Dicumarol and to a lesser extent with heparin. However, since March 1, 1950, two new anticoagulant drugs have been under trial at the Henry Ford Hospital. These are Tromexan, which is a coumarin derivative, and Paritol, a synthetic, heparinoid substance. During this time eighty-five patients have been treated with Tromexan, and seventy patients have received Paritol. While 140 patients received Dicumarol as controls, ninety patients received Heparin.

Tromexan; whose chemical formula is 3,3'-car-

TABLE XIV. VENTRICULAR RUPTURE

No.	Age	Sex	Date of Rupture	Type Infarct	Previous Angina Other Remarks
1	73	Male	? "Silent"	Anterior	No previous angina
2	47	Male	12th Day	Anterior	No previous angina
3	56	Male	6th Day	Anterior	Previous infarct 1 year before
4	59	Male	6th Day	Posterior	Angina 4 weeks, hypertension, obesity
5	53	Female	6th Day	Anterior (apex)	Angina 2 weeks, hypertension, obesity
6	38	Male	26th Day	Anterior	Angina 2 weeks, mural thrombi
7	60	Female	23rd Day	Anterior (apex)	Obesity, mural thrombi
8	66	Female	12th Day	Anterior	Hypertension, Obesity

boxy-methylene-bis-(4-hydroxycoumarin) ethyl ester, has been under study in all cases of thromboembolic disease in which dicumarol has been used previously. It is a much more rapidly acting drug than Dicumarol and usually produces a therapeutic effect on the prothrombin time within eighteen to twenty-four hours, and at most, thirty-six hours. Its rapidity of action has made it difficult to stabilize patients on a daily dose. Some progress in this direction has been made by giving the drug in two divided doses, 12 hours apart. Since Tromexan is so rapidly excreted, its use in ambulatory patients has not been tried save in one case. It is our feeling that a longer acting drug is preferable for out-patient use. At present the extremely high cost of Tromexan compared to Dicumarol is another factor against its use over a long-term program.

Although Tromexan is reputed to be somewhat less toxic than Dicumarol its use is attended by the same hazards. Two of our patients have had serious, though not fatal hemorrhages. One had gastrointestinal bleeding. The other had pulmonary hemorrhage.

So far the only other untoward reaction accompanying Tromexan has been occasional nausea and vomiting. This can usually be controlled by dividing the dose to be given.

Paritol is a synthetic, heparinoid substance manufactured from kelp. Its chemical name is sodium poly-anhydro-mannuronic acid sulfate. It is given intravenously and produces an effect on

blood clotting within fifteen to thirty minutes, similar to Heparin. Although it must be given in larger doses than Heparin, its action is two to three times as long. We have been using a standard dose of 300 mg. to start and 200 mg. whenever the clotting time (Lee-White Method) drops below 20 minutes. This usually occurs twelve to fifteen hours after the initial dose. This drug has worked quite well and has the advantage that the patient need only receive injections twice daily. However, with the last few lots of the drug some disturbing reactions have occurred. The chief alarming feature, reported to us by other users has been a sudden drop in blood pressure. Four reactions have occurred in our study, none of which were accompanied by severe blood pressure drops. Our reactions were chiefly nausea, vomiting, back pain, some general collapse, and numbness and tingling in the fingers. Since this has only occurred with late batches of the drug, it may be due to impurities. It has since been recommended that the material be diluted from a 10 per cent solution to 5 per cent with the idea of reducing the amount of material given at one instant.

Paritol is not yet available for general use but should be much less expensive than Heparin and if the recent reactions can be overcome, ought to be a welcome addition to the therapy of thromboembolic episodes.

Contraindications for Tromexan are the same as those for Dicumarol. Paritol is contraindicated in any disturbance in kidney function associated with a rise in nonprotein nitrogen.

In connection with the routine use of anticoagulants in the treatment of myocardial infarction, Irving Wright, as a result of the statistical studies of the co-operating hospitals of the Committee for the Evaluation of Anticoagulants for the American Heart Association, has concluded that it is advisable to treat all patients with myocardial infarction in this manner. His recommendation has perhaps not met with unanimous support and interest has been aroused in this question as a result of two recent papers.

One was by Bresnick and his co-workers³ in the *New England Journal of Medicine*, November 23, 1950, in which a considerable series of cases of myocardial infarction were treated in what he terms as average hospital practice using anticoagulants on alternate cases. The management of the anticoagulant was evidently left to the house

staff and it is admitted that the prothrombin time was not adequately controlled. The results in this series showed no advantage for the cases treated with anticoagulants as compared with the controls. The only lesson that can be drawn from this series, in our opinion, is that the handling of anticoagulants in these cases is capable of producing good results if the problem is carefully and closely followed by one or two well-informed people, to wit, a competent careful internist, or an anticoagulant service, but if the drugs required are carelessly handled, it is obvious that the desired therapeutic effect will not be arrived at and moreover the hazards of the procedure may be enhanced.

A second paper of interest appeared in the *American Medical Association Journal*, February 10, 1951, on the indications for dicumarol in acute myocardial infarction by Henry I. Russek, Burton L. Zohman and LaVere G. White,¹⁵ in which these authors propose a selective use of anticoagulants in patients with myocardial infarction. They cite that in the average first infarction, the expected mortality is only 8 per cent, and if the patient presents on the day of admission none of the following serious prognostic conditions: (1) previous myocardial infarction, (2) intractable pain, (3) extreme degree of persistence of shock, (4) significant enlargement of the heart, (5) gallop rhythm, (6) congestive heart failure, (7) auricular fibrillation or flutter, ventricular tachycardia or intraventricular block, or (8) diabetic acidosis, or other complicating serious disease states; that the probable mortality of these patients is very small, 2.45 per cent, and, therefore, they do not justify the hazard of anticoagulant treatment.

We would have serious objection to this method of procedure, however, for on reviewing our own material, it seems in the first place that our mortality from first infarctions has been 21.7 per cent. Again, the picture on the first day of admission may not necessarily enable one to predict freedom from serious complications in the remainder of the patient's stay. Also, it is worth stating here that in our own experience with anticoagulants, we have not yet had a death from the use of these drugs. Reviewing our thromboembolic complications, there was only one episode on the first day, but eight were catalogued on the second and fourteen on the third day. Again, of thirty-eight cases of auricular fibrillation devel-

MYOCARDIAL INFARCTION—SMITH

TABLE XV. THROMBOEMBOLIC COMPLICATIONS

	1	2	3	4	5	6	7	8	9	10	After 10 Days
No Anticoagulants 142 Patients 166 Emboli Episodes	—	7	9	7	10	8	6	7	3	5	105
Dicumarol 120 Patients	—	—	—	—	—	—	—	—	1	—	2
Dicumarol & Heparin 87 Patients	—	—	—	—	—	—	—	—	1	—	3

oping the first week, thirteen were recorded on the first day and twenty-five developed afterward. In ventricular tachycardia, out of thirteen cases five developed on the first day, leaving eight for subsequent development. Also, concerning congestive failure which was accountable for a 57 per cent mortality in our series, while forty-three out of 105 developed in the first week were apparent on the first day, sixty-two of these cases developed subsequent to the first day. In other words, it seems a little unsafe to take it for granted that since on the first day serious complications have not made their appearance that they will not develop subsequently.

Our present point of view regarding the use of anticoagulants will, therefore, be that of a continued recommendation for use, in all cases of myocardial infarction treated by a careful, competent internist or in a hospital where there is a capable anticoagulant service; unless some contraindication exists to this form of therapy as in liver or kidney disease. At present we feel that our most useful anticoagulant is Dicumarol and that parenteral anticoagulants are not necessary unless there is some reason why the drug may not be given by mouth. Tromexan is useful and effective, but has the disadvantage of high cost, and while not so many instances of bleeding are encountered in its use, it is not free from the hazard of hemorrhage.

Discussion

This study concerns a large number of patients with acute myocardial infarction as observed in the dynamic city of Detroit, and it may offer some points of interest to be compared with similar experiences in other centers.

The data presented indicate a fairly even distribution of cases throughout the months of the year, and slightly increased number in November (ninety-five as compared to eighty-six in September, the next highest month).

In this series the cases were somewhat more preponderantly male than in several previously reported series.

The peak incidence in men occurred in the sixth decade, while in women, it was in the seventh. Several cases occurred in men in the third decade, but in women only two before the fourth. At the peak incidence of the disease, female mortality was higher than male, 33 per cent compared to 17.9 per cent, though at seventy and beyond the mortality rate curve is the same in both sexes. The mortality rate in the females in the 6th decade was strikingly higher than that in males in the 6th decade.

Hypertension appeared to have no bearing on immediate mortality and obesity did not increase the immediate hazard.

Preceding angina pectoris was present in about one-half the cases but had no effect on the mortality rate. However, since 15 per cent of this group had pilot angina of less than one month's duration, a series of thirty-nine such patients were hospitalized and placed on anticoagulants for a two weeks' period. It is believed that while relief from pain was a prominent feature, that the period of anticoagulant therapy was insufficient and should be prolonged in this group for a longer period and then should be tapered off instead of being abruptly ended.

This review suggests that in men a history of a previous myocardial infarction adds considerably to the immediate hazard of a new infarction. An insufficient number of women having such history were studied to permit definite conclusions regarding them.

While the incidence of diabetes seemed to increase the tendency to myocardial infarction in women, the prognosis in this group for immediate mortality was not greater than in the nondiabetic female.

The benefits of anticoagulants in decreasing the

incidence of thromboembolic episodes and lowering mortality was evident and was much the same as in other series.²¹ Because of the significant number of early thromboembolic episodes encountered, there seemed to be confirmatory evidence that the immediate initial use of heparin was justified to overcome the lag in the Dicumarol effect; but in making a comparison of cases in which heparin was added initially, with another series using Dicumarol alone, there seemed to be no advantage gained by the use of heparin over the group treated by Dicumarol alone. Avoidance of the use of a parenteral anticoagulant spares the patient both annoyance at a time when rest is of paramount importance, and also considerable extra expense later.

Experience has been reported with two newer anticoagulants, Tromexan for oral administration and Paritol for parenteral use.

Emphasis is placed on the need for careful and experienced control in the management of anticoagulant drugs in order to obtain best results and avoid the danger of serious bleeding.

The treatment of all cases of myocardial infarction with anticoagulants is recommended unless contraindication to their use is present.

The most vulnerable individual, from the mortality standpoint, seems to be the female with anterior infarction. In general, the immediate prognosis for anterior infarction is more serious than posterior, but our previous report¹⁶ indicated that the over-all mortality after the elapse of five or more years shows the outcome to be the same.

Paroxysmal ventricular tachycardia was an extremely ominous development. The difficulty of handling it with ordinary doses of quinidine has led us recently to use considerably larger doses. We control the administration of the drug by frequent direct-writer electrocardiograms. Intravenous quinidine (quinidine lactate) has been successful in several instances where oral quinidine could not be used or was unsuccessful.

The use of prophylactic quinidine in patients showing premature beats deserves further evaluation since a comparison of mortality rates in such patients who had received the drug with an equal number who did not, shows no decided advantage for either group.

The indication or contraindication for digitalis in cardiac failure complicating myocardial infarction has long been one about which there was no general agreement. A study of these figures

would indicate that these patients have a somewhat better chance of survival if they are digitalized than if they are not. Therefore, the use of digitalis in patients with myocardial infarction who show evidence of serious congestive cardiac failure is recommended.

The fact that all but one of the cases of ventricular rupture occurred in individuals who had had no history of previous coronary occlusion, or longstanding angina, does suggest that these patients were less well able to survive the shock of sudden interruption of a portion of the coronary artery circulation without more extensive and serious muscle damage than those in whom previous coronary narrowing or occlusion may have led to the development of an increase in the anastomotic circulation of the coronary system.

Summary

1. A review of the clinical records of 920 cases of acute myocardial infarction has been presented.
2. The mortality rate was found to be influenced significantly by the sex of the patient, the age at onset, the site of the myocardial infarction, the degree of leukocytosis, the presence of thromboembolic complications, the presence of cardiac arrhythmias, the presence of congestive heart failure, and the history of a previous myocardial infarction.
3. No influence on the mortality rate was found when hypertension, angina pectoris, diabetes mellitus, and obesity were present, although they were encountered frequently in this group.
4. The various therapeutic measures attempted were tabulated. Anticoagulant therapy had the most distinctly favorable influence on the mortality rate. Dicumarol alone seemed as effective as dicumarol plus initial heparin in preventing thromboembolic episodes. Digitalis seemed beneficial in treating congestive heart failure; certainly no distinctly unfavorable effect was evident. Quinidine in adequate doses influenced favorably the outcome of a few cases of ventricular tachycardia. Neither digitalis nor quinidine appeared to be particularly beneficial in the conversion of auricular fibrillation to sinus rhythm.
5. The incidence of ventricular rupture and discussion of contributing factors preceding its appearance are presented.

6. The high incidence of premonitory pain occurring for a few days to four weeks prior to acute myocardial infarction was striking in this series.

Acknowledgment

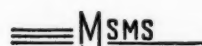
Gratitude is expressed to Drs. John W. Keyes and Ralph M. Denham for their assistance in the preparation of this paper.

Bibliography

1. Barnes, A. R., and Ball, R. G.: The incidence and situation of myocardial infarction in one thousand consecutive postmortem examinations. *Am. J. M. Sc.*, 183:215, 1932.
2. Billings, F. T., Jr.; Kalstone, B. M.; Spencer, J. L.; Ball, C. O. T., and Meneely, G. R.: Prognosis of acute myocardial infarction. *Am. J. Med.*, 7:356-370 (Sept.) 1949.
3. Bresnick, E.; Selverstone, L. A.; Rappaport, B.; Cheskey, K.; Hultgreen, H. N., and Sise, H. S.: Experiences with dicumarol in acute myocardial infarction. *New England J. M.*, 243:806-810 (Nov. 23) 1950.
4. Chambers, W. N.: Acute myocardial infarction. *New England J. Med.*, 235:347, 1946.
5. Levine, S. A., and Brown, C. L.: Coronary thrombosis: its various clinical features. *Medicine*, 8:245, 1929.
6. Levine, S. A., and Levine, H. D.: Electrocardiographic study of lead IV, with special reference to findings in angina pectoris. Discussion by W. B. Stroud. *Tr. A. Am. Physicians*, 50:303, 1935.
7. Master, A. M.; Dack, S.; Field, L. E., and Horn, H.: Diagnosis and treatment of acute coronary diseases. *J.A.M.A.*, 141:887-891 (Nov. 26) 1949.
8. Master, A. M.; Dack, S., and Jaffe, H. L.: Age, sex and hypertension in myocardial infarction due to coronary occlusion. *Arch. Int. Med.*, 64:767, 1939.
9. Mintz, S. S., and Katz, L. N.: Recent myocardial infarction: An analysis of five hundred and seventy-two cases. *Arch. Int. Med.*, 80:205, 1947.
10. Mullins, W. L.: Age incidence and mortality in coronary occlusion. *Pennsylvania M. J.*, 322-325 (Feb.) 1936.
11. Nay, R. M., and Barnes, A. R.: Incidence of embolic or thrombotic processes during the immediate convalescence from acute myocardial infarction. *Am. Heart J.*, 30:65, 1945.
12. Nichol, E. Sterling: The use of anticoagulants in acute coronary insufficiency or impending myocardial infarction. *Southern M. J.*, 43:565-574 (July) 1950.
13. Parkinson, J., and Bedford, D. E.: Cardiac infarction and coronary thrombosis. *Lancet*, 1:4, 1928.
14. Rosenbaum, F. F., and Levine, S. A.: Prognostic value of various clinical and electrocardiographic features of myocardial infarction: I. Immediate prognosis. *Arch. Int. Med.*, 68:913 (Nov.) 1944.
15. Russek, H. I.; Zohman, B. L.; White, L. G., and Doerner, A. A.: Indications for bishydroxycoumarin (dicumarol) in acute myocardial infarction. *J.A.M.A.*, 145:390-392 (Feb. 10) 1951.
16. Smith, F. Janney; Goodrich, B. E., and Needles, Robert J.: Coronary artery thrombosis. *J. Lab. Clin. Med.*, 24:367-374 (Jan.) 1939.
17. VanderVeer, J. B., and Brown, L. E.: The diagnosis and prognosis of coronary occlusion. The electrocardiogram as an aid. *Pennsylvania M. J.*, 39:303, 1936.
18. Wessler, S.; Schlesinger, M. J., and Zoll, P. M.: Clinical and pathologic factors in the pathogenesis of spontaneous myocardial rupture. Program,

American Heart Assn., Atlantic City, June 3-4, 1949.

19. Willius, F. A.: Life expectancy in coronary thrombosis. *J.A.M.A.*, 106:1890, 1936.
20. Wood, F. C.; Bellet, S.; McMillan, T. M., and Wolferth, C. C.: The electrocardiographic study of coronary occlusion: further observations on the use of the chest leads. *Arch. Int. Med.*, 52:752 (Nov.) 1933.
21. Wright, I. S.; Marple, C. D., and Beck, D. F.: Anticoagulant therapy of coronary thrombosis with myocardial infarction. *J.A.M.A.*, 135:1074-1079 (Dec. 11) 1948.



CONGENITAL CARDIOVASCULAR DISEASE

(Continued from Page 1387)

5. Cooley, R. N.; Bahnson, H. T., and Hanlon, C. R.: Angiocardiography in congenital heart disease of cyanotic type with pulmonary stenosis or atresia. I. Observations on the tetralogy of Fallot and "pseudo-truncus arteriosus." *Radiology*, 52:329 (Mar.) 1949.
6. Cooley, R. N.; Sloan, R. D.; Hanlon, C. R., and Bahnson, H. T.: Angiocardiography in congenital heart disease of cyanotic type. II. Observations on tricuspid stenosis or atresia with hypoplasia of the right ventricle. *Radiology*, 54:848 (June) 1950.
7. Dotter, C. T., and Jackson, F. S.: Death following angiocardiography. *Radiology*, 54:527 (Apr.) 1950.
8. Edwards, J. E.; Bulbulian, A. H., and Rogers, H. M.: Pathologic and embryologic considerations on tetralogy of Fallot. *Proc. Staff Meet. Mayo Clinic*, 22:161 (Apr.) 1947.
9. Gross, R. E.; Hurwitt, E. S.; Bill, A. H., Jr., and Peirce, E. C.: Preliminary observations on the use of human arterial grafts in the treatment of certain cardiovascular defects. *New England J. Med.*, 239:578 (Oct. 14) 1948.
10. Hammann, J. F.; Gibson, S., and Potts, W. J.: Observations on 117 patients operated on for congenital pulmonary stenosis. *Pediatrics*, 3:575, 1949.
11. Horger, E. L.; Dotter, C. T., and Steinberg, I.: Electrocardiographic changes during angiocardiography. *Am. Heart J.*, 41:651 (May) 1951.
12. Keith, J. D., and Forsythe, C.: Aortography in infants. *Circulation*, 2:907 (Dec.) 1950.
13. Muller, W. H., Jr., and Sloan, R. H.: Experiences with the use of direct aortography in the diagnosis of coarctation of the aorta. *J. Thoracic Surg.*, 20:136 (July) 1950.
14. Robb, G. P., and Steinberg, I.: Practical method of visualization of the chambers of the heart, the pulmonary circulation and great blood vessels in man. *J. Clin. Invest.*, 17:507, 1938.
15. Scott, W. G.: The development of angiocardiography and aortography. *Radiology*, 56:485 (Apr.) 1951.
16. Sommers, S. C., and Johnson, J. M.: Congenital tricuspid atresia. *Am. Heart J.*, 41:130, 1951.
17. Steinberg, W. F.; Grishman, A., and Sussman, M. L.: Angiocardiography in congenital heart disease. III. Patent ductus arteriosus. *Am. J. Roentgenol.*, 50:306 (Sept.) 1943.
18. Taussig, H. B.: Congenital Malformations of the Heart. New York: The Commonwealth Fund, 1947.
19. Thompson, W. H.; Figley, M. M., and Hodges, F. J.: A roll film apparatus for rapid serial filming. *Radiology*, 56:242 (Feb.) 1951.

Complication of Coronary Occlusive Disease

By Myrton S. Chambers, M.D.

Raymond E. Johnson, M.D.

Michael C. Kozonis, M.D.

Flint, Michigan

TO DECIDE what is normal and what is pathological depends upon what is conspicuously familiar. This is particularly true of the complications of coronary occlusive disease. The recognition of these complications is of paramount importance: first, for the sake of definitive therapy, and second, the complication may be the initial manifestation of the coronary occlusive episode, whose relationship to the acute coronary occlusion may or may not be recognized.

The medical literature contains many reviews of isolated complications or categorically related complications of this subject. However, there are few, if any, complete discussions of the complications. It is the purpose of this paper to review as completely as possible the potential complications of coronary occlusive disease.

Arrhythmias

Arrhythmias are a frequent complication of coronary occlusive disease. However, certain factors such as anoxemia, decreased nutrition of cardiac muscle, disturbed autonomic nervous reflexes, increased irritability of the myocardium, anatomical lesions and heart failure are recognized as definite etiological factors in production of arrhythmias. All of these are present to a high degree in coronary artery occlusive disease. The onset of an arrhythmia in patients with coronary occlusive disease may be of considerable diagnostic significance. Occasionally, it is the initial, perhaps the only, sign of the presence of an acute coronary occlusion.

The most commonly encountered arrhythmias in coronary occlusive disease are premature beats, usually ventricular, which occur in about 25 per cent of the cases. Extrasystoles are usually transient in nature but in some cases may be permanent. They may herald the onset of a more serious arrhythmia. Ventricular extrasystoles may be sub-

sequently followed by paroxysmal ventricular tachycardia.

Master¹⁵ analyzed 300 acute coronary occlusive cases as to the type and incidence of arrhythmias. Excluding premature beats present in 25 per cent of the cases, 14 per cent of the total cases demonstrated an arrhythmia. Auricular fibrillation occurred in 7.3 per cent, auricular flutter in 1 per cent, paroxysmal supraventricular tachycardia and ventricular tachycardia in 3 per cent. A higher incidence of arrhythmias were noted in the older age groups, in women and in patients with cardiomegaly as a result of previous hypertension. Heart failure was more common in this group of cases. Half of all the encountered arrhythmias appeared in the first two days and the majority during the first week. The majority of the arrhythmias were transitory. The mortality rate was 38 per cent in this group as opposed to 26 per cent in cases without arrhythmias. There was a particularly high mortality associated with the most commonly encountered arrhythmia, other than extrasystoles, namely, auricular fibrillation.

Askay and Neurath studied the prognostic significance of auricular fibrillation in coronary occlusive disease. An analysis of 1247 coronary occlusive cases admitted to Los Angeles County General Hospital was done and 84 cases demonstrated auricular fibrillation. The mortality rate of the latter group was 79.8 per cent as opposed to the whole group mortality rate of 51.5 per cent. The mortality rate was 58.6 per cent in the transitory auricular fibrillation group and 89.4 per cent in the persistent cases. In cases where auricular fibrillation preceded the acute coronary occlusion there was a 79 per cent mortality.

Auricular flutter, although not as commonly encountered as auricular fibrillation, was associated with a mortality rate of 66 per cent. Levine and Rosenbaum¹³ encountered auricular flutter in 2.5 per cent of their cases of coronary occlusive disease. Auricular flutter was a more persistent arrhythmia than auricular fibrillation.

The occurrence of auricular arrhythmias during the course of coronary occlusive disease cannot be explained on an anatomical basis since the arteries involved and the anatomical lesion itself are usually in the ventricular myocardium, although there have been some isolated reports of auricular infarction. However, there have been no studies of auricular infarction in regard to the in-

From the Internal Medicine Section, Hurley Hospital, Flint, Michigan.

cidence and type of arrhythmias encountered. Klainer and Altschule¹² maintain that a considerable volume of evidence indicates that experimentally produced auricular fibrillation in animals is due to increased vagal activity. There is no definite proof of this supposition. Sixty-four per cent of their patients with paroxysmal auricular fibrillation associated with coronary occlusion showed prolongation of the PR interval. Less than 16 per cent of Master's¹⁷ patients showed PR interval prolongation. Explanation of the prolonged PR interval in coronary occlusive disease is not known. Some say it is anoxemia; others, a result of increased vagal activity. Klainer¹² feels that there is a higher incidence of auricular fibrillation and flutter in those cases of coronary occlusion who have exhibited increased PR intervals.

Paroxysmal supraventricular tachycardias and paroxysmal ventricular tachycardias are encountered rather infrequently in the course of coronary occlusive disease. Ventricular tachycardia, although occurring rarely, may be a forerunner of ventricular fibrillation and death. For this reason, its prompt recognition and treatment are most essential. All of Levine and Rosenbaum's¹³ cases demonstrating paroxysmal ventricular tachycardia had infarctions located on the anterior aspect of the myocardium.

Conduction Disturbances

Various degrees of heart block are not infrequent as a complication of acute coronary occlusive disease. Simple prolongation of the PR interval was observed by Masters et al¹⁷ in 16 per cent of some 335 cases of acute coronary occlusive disease. In addition, second degree partial and complete heart block was noted in 3.2 per cent of their cases. The sudden onset of an increased PR interval and heart block may be the first and only sign of coronary artery occlusive disease. Klainer¹² believed that cases demonstrating increased PR interval and heart block were associated with an infarction of the posterior portion of the intraventricular septum and posterior surface of the left ventricle as a result of right coronary artery occlusion. He felt that the presence of profuse anastomotic channels in the intraventricular septum around the AV nodes prevented the more frequent occurrence of heart block and also effected its remission when it did occur.

Intraventricular conduction disturbances are

found more frequently in coronary occlusive disease than the tachycardias or complete heart block. Intraventricular block was found in 12 per cent of the cases cited in the literature. Higher figures, up to 28 per cent, were observed in series of cases later autopsied, perhaps indicating an increased mortality rate associated with intraventricular block. Left bundle-branch block was more frequent than right bundle-branch block. It was felt that the sudden appearance of defective intraventricular conduction, transient or permanent, should suggest the possibility of a recent coronary artery occlusion even when typical clinical or electrocardiograph evidence was lacking, particularly when associated with shock or heart failure. This was especially true of left bundle-branch block because the conduction disturbance in most cases renders impossible the diagnosis of infarction by the electrocardiogram. Bundle-branch block at times may be the only evidence that the patient sustained a coronary occlusive episode in the past. Defective intraventricular conduction was more commonly found in patients who had longstanding hypertension, cardiac enlargement, congestive heart failure and previous infarction. Intraventricular block was usually permanent while partial or complete AV block and other arrhythmias were most often temporary. The mortality rate of the cases demonstrating intraventricular block was 42 per cent as compared to 23 per cent in cases with normal conduction. There was no evidence to indicate that left bundle-branch block was of more serious import than right bundle-branch block.

Complete heartblock is rarely encountered in coronary occlusive disease. Schwartz¹⁹ reported on fifteen cases of complete heart block associated with coronary occlusive disease. In all Schwartz's cases there was an antecedent hypertension present. Four of his cases succumbed in an average of four days and the remaining lived at least twenty-six months. Four of his cases reverted to a normal rhythm.

The anatomical basis for complete AV block was septal infarction in 80 per cent of the patients. Kerr¹¹ feels that heart block is usually associated with occlusion of the right coronary artery which in 90 per cent of the cases supplies the AV node and the bundle of His by the ramus septi fibrosi. Since this branch arises almost at the origin of the right coronary artery, proximal to the

usual site of thrombosis, the blood supply to this vessel is infrequently occluded. Because of the rich anastomosis between the left and right coronary arteries in the region of the AV node and bundle, complete heart block is most likely when both vessels have been occluded. In most cases of heart block autopsy reveals multiple occlusions with massive infarction usually involving the intraventricular septum. As a result, impaired intraventricular conduction is often associated with complete heart block. It is noteworthy that, in thirteen of the fifteen patients with heart block following acute coronary occlusion described by Schwartz, there was in addition intraventricular block. Masters, as does Kerr, feels that the cause for both the AV and intraventricular block in coronary occlusive disease is the same—occlusion of the specific artery to the septum with infarction of the region of the AV node and its branches. Septal infarct which may be the cause of the bundle-branch block may extend high enough to involve the AV node or bundle or, as suggested previously, the infarct may involve both bundle branches simultaneously and produce defective atrioventricular conduction.

It is interesting that the first case diagnosed as coronary occlusion at the bedside and confirmed at autopsy in 1876 by Dr. Hassimer had a very slow heart rate, eight beats per minute. It is almost certain that complete heart block existed in this first cited case of coronary occlusive disease. The first clinically recognized case of coronary artery occlusion associated with complete heart block and Stokes-Adams syndrome was described by Levine in 1918. The Stokes-Adams syndrome characterized by syncope, convulsions and coma may appear after the development of complete heart block but usually only when the ventricular rate falls below forty. The incidence of Stokes-Adams syndrome after acute coronary occlusive disease is much lower than that of complete heart block. The recognition of this syndrome is most important since heroic measures are required immediately for prolongation of life.

Heart Failure

Right or left heart failure or combined heart failure may develop immediately, a week or month after the occurrence of an acute coronary occlusive episode. Heart failure may be either temporary or permanent in nature. Chronic left

heart failure is characterized by recurrent episodes of paroxysmal nocturnal dyspnea, progressively increasing exertional dyspnea, cough, orthopnea, a pressure feeling in the chest, and the presence of râles at the lung bases bilaterally. This may result from the onset of acute pulmonary edema. Acute left ventricular failure may be present at the onset of the acute coronary occlusion and disappear in a few days to a few weeks. There have been cases of chronic left heart failure persisting for several years. Levine and Rosenbaum¹³ reported an incidence of 28 per cent of congestive heart failure in their patients. Nineteen per cent of these patients were in mild failure and 9 per cent in severe failure. The majority of the cases encountered were associated with anterior infarction, bundle-branch block and auricular fibrillation. Prolonged left-sided failure often terminated in combined failure.

Right-sided failure characterized by hepatomegaly, increased venous pressure and peripheral edema usually appeared later in the course of coronary occlusive disease. However, it may be the initial symptom in patients who have had previous coronary occlusive disease or previous severely damaged myocardium. Twenty per cent of the cases of acute coronary occlusive disease die in heart failure, usually of the combined type. The recognition and management of heart failure in acute coronary occlusive disease is most important.

Angina Pectoris

Angina pectoris is found in about 70 per cent of the cases of coronary occlusive disease prior to the onset of the acute coronary occlusive episode. There is no higher incidence in patients sustaining anterior than in those sustaining posterior infarction. It is more commonly found in cases of defective intraventricular conduction. Those cases demonstrating angina previously had a mortality rate less than those who did not have angina. It was believed that they had developed a collateral circulation with their angina and that the sudden occlusion of the blood supply to the heart did not place the patient in as precarious a situation as those cases who did not have angina previously. Occasionally patients, who have suffered from angina pectoris, lose their pain after an attack of acute coronary occlusive disease, probably because the anoxic muscle responsible for the pain is no longer viable. However, much more frequently

the attacks of angina pectoris on effort or at rest persist after acute coronary occlusion and became more severe. In about half the cases where angina pectoris was absent before the acute coronary episode it subsequently developed after recovery from the acute episode. Many persons who had had angina previous to their myocardial infarction noted that their attacks were more easily precipitated and more persistent following their acute coronary episode.

Thrombo-embolic Phenomena

The exact incidence of thrombo-embolic phenomena in coronary occlusive disease is unknown and varies widely in the reported series from 9 to 60 per cent. Thrombo-emboli may arise secondary to any of the following: endomural thrombi, shock, or phlebothrombosis of the lower extremities or pelvis. Some believe that thrombo-embolism is more often a result of phlebothrombosis and coronary shock than it is of endomural thrombi.⁵ Whenever the infarcted area lies in apposition to a heart chamber, the propagation of an endomural thrombus is possible. The continuous agitation of the heart may fragment the thrombus to form an embolus which may be carried peripherally. The incidence of endomural thrombi reported in the literature is 37 to 44 per cent. The incidence of endomural thrombi in each chamber is roughly proportional to the frequency of infarctions in the wall of that chamber, thus they occur in approximately this order of decreasing frequency: left ventricle, left auricle, right auricle and right ventricle.¹⁴

Margulies' series of forty-eight instances of thrombo-embolism in coronary occlusive disease demonstrates that extracardiac thrombo-emboli can be traced to causes other than endomural thrombi, that all endomural thrombi do not cause peripheral embolism and that an endomural thrombus can be present with a peripheral thrombo-embolic phenomenon without being incriminated as the etiological factor.¹⁴ In only thirty-four of these cases were there endomural thrombi, and of these, only twenty-one were on the proper side to have caused the embolism. Unless a septal defect or other shunting mechanism is present, emboli from the left side of the heart enter only the greater circulation, and those from the right side of the heart only the lesser circulation. Even if shunting mechanisms can be excluded, a dis-

inction must still be made among those thrombo-embolic phenomena of the greater circulation, as to whether they arose from the left-sided endomural thrombus or from the coronary shocking mechanism; and similarly in those of the lesser circulation as to whether they arose from shock, a right-sided endomural thrombus or from a phlebothrombosis. The lungs are most frequently involved in extracardiac thrombo-embolic phenomena originating from an endomural thrombus.⁸ Such involvement is two to three times more common than that of the next most frequently affected organ, the kidney. While it is undoubtedly true that pulmonary lesions are a more frequent cause of death than is usually recognized, such involvement is more often secondary to phlebothrombosis than it is to endomural thrombi. Thus, in Margulies' series of twenty-eight pulmonary emboli, only five could be attributed to endomural thrombi. In the other twenty-three patients, the pulmonary emboli were all secondary to a phlebothrombosis. Other lodgments of emboli are in approximate order of decreasing frequency: the brain, spleen, extremities and mesenteric vessels. The most frequent site of lodgment in the extremity vessels was in the femoral artery at the origin of the profunda branch. The most frequent site of mesenteric lodgment was in the superior mesenteric artery presumably because this vessel branches less sharply from the aorta than does the inferior mesenteric artery. Prior to the introduction of anticoagulant therapy such thrombo-embolic phenomena were either the direct cause of or a contributing factor in 25 per cent or more of the myocardial deaths. Subsequent to the introduction of this therapy there has been an apparent reduction in deaths by one-third, and of complications by one-fourth.²² This effect has been produced largely by reducing the thrombo-embolic phenomena. The state of shock accompanying an acute myocardial infarction may well precipitate a peripheral thrombosis, especially in arteriosclerotic vessels. Dozzi has emphasized how frequently unsuspected myocardial infarctions are found at the autopsy of hemiplegic patients and suggests that all such patients should be suspected of having a myocardial infarction.⁵ The shock state of either lesion may precipitate the other.

Ruptures of the Heart

Although the term rupture of the heart could be used to refer to a rupture of any of the struc-

tures of the heart, by common usage it applies only to a rupture of the ventricular wall. Ruptures of the intraventricular septum or of the papillary muscles are usually described as such. They are a complication of the acute massive infarction. The rupture usually occurs as a result of liquefaction necrosis of the infarction, probably during systole and especially at a time of exertion, since intraventricular pressure is higher in the erect position than in the supine position, and the cardiac output is greater. Ambulatory cardiacs are especially prone to such complications.⁷ This was well demonstrated by the unusually high incidence of ventricular rupture following acute infarction found to occur in mental institutions, where the patients, because of their agitated states, did not co-operate in a rest regime.¹⁰ In a massive infarction more than one type of rupture may occur simultaneously.

Ventricular Rupture

The usual causes of ventricular rupture listed in order of importance are: trauma, myocardial infarction, ventricular aneurysm from either of these, abscess in the infarction site, and rarely the ulcerations of an endocarditis. Isolated instances of rupture due to dissection of the sinus of Valsalva, to echinococcal cysts and to malignancy have been reported. Ventricular ruptures due to myocardial infarction usually occur in the left ventricle, probably because infarctions are most frequent there. A concomitant hypertension is supposed to render a patient more prone to this condition. Death seems inevitable from the resulting cardiac tamponade. Two hundred and fifty cc. of blood is sufficient to cause a tamponade, but the blood may be present in amounts up to one liter. Death is not always instantaneous, however, since autopsy studies have revealed the presence of organized clots near the tear. Ventricular rupture usually occurs within the first two weeks after the acute infarction, especially between the second and the tenth day.

Perforation of the Intraventricular Septum

Although perforation of the intraventricular septum is undoubtedly often overlooked, it is much less common than rupture of a ventricle. Despite a characteristic clinical picture, it is very rarely ever recognized during life. It is usually secondary to a myocardial infarction; rarely it is due to ulcerations of a bacterial endocarditis. In contrast to

the congenital type of intraventricular septal defect which occurs high up in the thin portion of the septum, these occur in the lower thicker muscular portion. The defect that occurs is usually single and varies in size from pinpoint to 6 cm. in diameter. The prognosis is very grave and the patients die usually within a few weeks to months, although survival up to five years has been reported.

This is not so much due to the increased load thrown on the damaged myocardium by the altered hemodynamics as it is to the massiveness of the infarction. It may result from an infarction of either the left or the right coronary artery, although it is more commonly due to involvement of the left coronary branch. In neither instance, however, will perforation occur unless the circulation in the other artery is so compromised by sclerosis as to be unable to render adequate collateral circulation. The clinical picture is quite definite. The myocardial infarction is followed within one to two weeks by the sudden appearance of a loud systolic murmur at the left of the sternum in the fourth and fifth interspace. These murmurs are usually situated lower than those of Roger's disease and are often accompanied by a thrill. In general, the loudness of the murmur is inversely proportional to the size of the perforation. A murmur may be absent, however, irrespective of the size of the aperture, if the myocardial contractions are weak. Unless forward failure should supervene cyanosis does not occur since the shunt is from the arterial to the venous side. The blood pressure and pulse are similar in type to those encountered in aortic stenosis. The electrocardiogram is characteristic only of the type of myocardial infarction producing the lesion. Conduction defects are unusual probably because the lesion is in the lower part of the septum where the conduction fibers are widely dispersed. The diagnostic aspect of the electrocardiogram is a gradual development of a right axis deviation, concomitant with the right ventricular hypertrophy produced by the arterial venous shunt. The most confusing problems in the differential diagnosis are: rupture of a papillary muscle, a condition which will be discussed subsequently, and a sudden weakness and dilatation of the right ventricle. This latter condition itself may be a complication of myocardial infarction. The dilatation may lead to a relative tricuspid insufficiency producing a sys-

tolic murmur. This murmur is, however, without a thrill and is loudest in the tricuspid area. Other signs are pulsation of the liver and neck veins.

Rupture of the Papillary Muscle

Rupture of the papillary muscle is a cause of sudden death.¹⁸ It most frequently follows myocardial infarction but other causes are trauma, syphilis, tuberculosis and puerperal sepsis. It may apparently even occur spontaneously. The rupture may very rarely occur in the right ventricle, it usually involves the posterior papillary muscles of the left ventricle, and less often the anterior papillary muscles of the left ventricle. The rupture results in a sudden insufficiency of the mitral valve and this alteration of hemodynamics produces a harsh systolic murmur and an acute severe left heart failure with pulmonary edema. This murmur may lead to the confusion of this condition with a rupture of the intraventricular septum. However, the murmur of the ruptured papillary muscle is usually more apical in distribution and the circulatory alterations differ.

Infarction of the Atria

Infarction of the atria is of interest since it not infrequently gives rise to atrial perforation causing cardiac tamponade which clinically simulates ventricular rupture. An infarction of the atria is usually associated with other infarctions; it rarely occurs alone. It is easily overlooked at autopsy but should be suspected if an atrial thrombus is observed, since such thrombi are associated with 80 per cent of the atrial infarctions. The right atrium is involved most frequently. The causes of this condition are: myocardial infarction, periarthritis nodosa, occlusion of a congenital single coronary artery, and an ulcerative endocarditis. Clowe states that cardiac tamponade occurring under the age of forty is more commonly from atrial rupture, whereas, that occurring after the age of forty is more commonly from a ventricular rupture.⁴ The blood released by the rupture of an atrial infarct usually enters the pericardium; however, at times it may enter the pleural cavity. Although the clinical picture is that of ventricular rupture, one should suspect this condition in a patient who has changing atrial arrhythmias or in whom the electrocardiogram reveals alterations in the size of the P waves or AV block.

Abscess Formation in the Infarction Site

This is a rare complication usually seen only in the elderly patient.²⁰ The incidence reported in autopsy studies varies between 0.2 and 0.56 per cent. Ante-mortem recognition of this condition is almost impossible since its clinical characteristics are obscured by the more dramatic ones of either the infarction or its other complications.

Abscess formation in infarctions is usually secondary to a staphylococcal bacteriemia; however, it is possible that a septic embolus could cause an infected myocardial infarction directly.

The bacteriemic theory of origin is supported by the almost constant finding of similar organisms in the lungs and other organs.

The occurrence of such an abscess should be suspected in any debilitated patient with myocardial infarction, since debility from any cause predisposes to a bacteriemia. One should be especially suspicious in the presence of pneumonia or systemic infection, since these conditions may be either the cause or result of a bacteriemia.

Antibiotics and chemotherapy are indicated since abscess formation interferes with the healing of the infarction and abscessed infarction sites predispose to cardiac rupture.

Cardiac Aneurysms

Cardiac aneurysm implies only ventricular aneurysm. However, more properly, it should include both ventricular and septal aneurysms.

Ventricular Aneurysm

Ventricular aneurysm is a mechanical result of the fibrous transformation of the myocardium occurring secondarily to myocardial ischemia.² White says there is some degree of cardiac aneurysm in every myocardial infarction. The aneurysm begins as an acute lesion, and if it does not rupture, soon becomes a chronic lesion. If the scar is strong enough, no bulging will occur; however, if this is not the case a sacculum of varying size will develop. Pleural-pericardial adhesions about the lesion, or the formation of a thrombus within the sacculum may so reinforce the wall as to prevent a rupture. The thrombus formation is, however, not innocuous since it may give rise to peripheral emboli. The most frequent site of occurrence is at the apex of the left ventricle, or in the anterior wall just above the apex. Myocardial infarctions are more common in the left ventricle, and the

wall in this part of the ventricle is the thinnest and most removed from the blood supply. The usual cause of this lesion is myocardial infarction. Other causes are: trauma, gumma, ulcerative endocarditis and abscess or cyst of the heart wall. The usual causes of death are: rupture with cardiac tamponade, cardiac failure and emboli from intramural thrombi. The condition is only rarely manifested by any diagnostic clinical signs. Adhesions frequently immobilize the apex and tenderness is present at this site. This fixation may not be obvious, however, since the left border may displace and simulate the apex. The precordial impulses may be weak, although the heart is contracting strongly. Frequently the pulse and the cardiac sounds may be weak, despite a diffusely heaving precordium and cardiac enlargement. Co-existing hypertension does not preclude an aneurysm. There may be two palpable apical impulses, that of the true apex and that of the aneurysmal sac. The heart failure that may occur in this condition is not peculiar. It is, however, difficult to effect recompensation in such a heart and repetitive failures and pulmonary infarctions are common. In summary, the usual clinical picture includes a myocardial infarction, congestive failure, a weak first heart sound, cardiac enlargement and somewhat less often a diffusely heaving precordium.

Since the clinical findings are so indefinite, x-rays, especially with multiple views, may be of value. With such views the aneurysm can be directly visualized on all but the diaphragmatic, hepatic and posterior cardiac surfaces. The aneurysmal dilatation may be of a diffuse type or of a localized bulging type. The presence or absence of aneurysmal pulsation is dependent on the thickness of the wall and the presence or absence of an intra-aneurysmal thrombus. Kymography is another x-ray procedure of value. At times the wall surrounding the aneurysmal scar may hypertrophy and thus overhang the scar and be mistaken for the aneurysm. The aneurysmal wall may be calcified. An important fluoroscopic sign is diminished systolic contraction in the aneurysmal zone. Corroborative evidence of the presence of an aneurysm is the fixation of the apex due to adhesions. The electrocardiogram has no characteristic pattern although an R ST elevation persisting long after the acute myocardial infarction episode has subsided has been attributed to the presence of an aneurysm.

Septal Aneurysm

Rarely an infarction may involve the septum and the process arrest short of a septal perforation, thus leaving the patient with a septal aneurysm. One case has been reported in which the patient had both a ventricular and a septal aneurysm.⁸ Although the clinical picture is usually not characteristic, it might simulate the Bernheim's syndrome. The bulging septal wall could interfere with the venous return and a picture of right heart failure would appear without the preceding occurrence of pulmonary congestion.

Myocardial Calcification

Calcification never occurs in a healthy myocardium, so it is possibly a protective measure to prevent a myocardial rupture.³ Such calcification may be part of a generalized metastatic calcinosis, but in its absence may still deposit at the site of myocardial damage. There have been rare instances reported in which the salts were reabsorbed and actual bone deposited. When looked for, such calcification may be quite evident on x-ray.

Shoulder-hand Syndrome

The shoulder-hand syndrome, Sudeck's atrophy and causalgia are all variations of a reflex dystrophy.⁹ It has long been recognized that such dystrophies occur after trauma. Recently they have been reported in the shoulders and hands from causes other than trauma. The clinical picture in all, however, simulates the posttraumatic condition. Other causes are: myocardial infarction, myocardial insufficiency, posthemiplegic states, postherpetic states and cervical osteoarthritis. They have been noted where the etiologies were mixed and in instances where the etiology was not determinable. The search for a common relationship among such widely varied lesions has led to the theory of the internuncial pool. It is thought that afferent impulses resulting from the tissue insult in any of the above conditions reaches the extensive network of interconnecting neurons in the central grey matter of the spinal cord which extends over many segments. At these levels potential pathways are formed so that the afferent impulses may reach the motor neurons of the sympathetic or anterior horn cells. The efferent impulse then gives rise to musculoskeletal or vasospastic changes which lead to the clinical syndromes of the reflex dystrophies. In the past,

there have been sporadic reports of the association of cardiac disease, especially myocardial infarction, with painful vascular and trophic changes of the shoulders and hands. Probably many infarctions are followed by some degree of ischemia of one or both upper extremities. Most of these changes are transient and completely reversible, others may persist in such a degree as to give rise to slight annoyance. Some have estimated that as many as 20 to 25 per cent may suffer irreversible trophic changes. Although the syndrome is in many instances initiated with shoulder pain, especially on the left, the lesions may be bilateral or occur separately on either side. They may also begin in the hands, they may involve any combination of the shoulder and hands or they may occur as a single lesion. In certain instances, the symptoms have suggested that the lower extremities may at times also be involved. The atrophy of disuse which occurs in the immobilized patient, the hypotension and decreased cardiac output often associated with left ventricular failure, which may follow an infarction, are contributing factors. That they aid materially in the production of the syndrome may be inferred from the close correlation between the severity of both the syndrome and the myocardial damage. Obviously, the worse the myocardial status, the more prominent are these contributing factors. However, it is also true that the more severe and lasting is the myocardial damage the more severe and lasting is the reflex vasospasm. The onset is with pain in the hands and shoulders, frequently of a painful arthritic nature. This usually follows the acute infarction by three weeks to four months. Other than the occasional case of shoulder involvement the pains are not related to angina. The hands often undergo changes which clinically are much like those of Raynaud's syndrome. Initially, they may be stiff and swollen with a nonpitting edema. After a time, the swelling subsides but the pain and stiffness persist. The skin which had become smooth, tight and overdistended now becomes thickened and dull. The joints become apparent as the soft tissues atrophy. This gives rise to cold, withered, wooden fingers with a variable functional loss, to which the name posttraumatic sclerodactylia has been applied. Various color changes and paresthesias have been reported. The underlying bones show a Sudeck-type atrophy. These atrophic changes may progress for some three to eleven months after

the acute infarction and actual Dupuytren's contractures may result.

At times comparable to the changes in the hands, fibrosis and atrophy occurs in the shoulders leading to varying ankylosis. The syndrome usually follows infarction but it can follow severe angina complicated by severe myocardial insufficiency.

The prognosis for life is that of the cardiac lesion. The severity of the disability produced and the frequency of occurrence of the syndrome are proportional to the seriousness of the cardiac insult. Persistent myocardial insufficiency perpetuates and aggravates the syndrome. The acute and early trophic stages are reversible, the later stages irreversible. In general, the better the myocardial function the better the prognosis for recovery.

Conclusion

This review of the complications of coronary occlusion has been presented in order that the reader may become acquainted with these complications and their clinical significance from a diagnostic, prognostic and therapeutic standpoint.

References

1. Askey, J., and Neurath, O.: The prognostic significance of auricular fibrillation in association with myocardial infarction. *Am. Heart J.*, 29:575 (May) 1945.
2. Berk, L. H.: Cardiac aneurysm. *Am. Heart J.*, 17: 569-80 (May) 1939.
3. Borman, M. C.: Calcification of left ventricular infarction. *Ann. Int. Med.*, 18:857-865 (May) 1943.
4. Clowe, G. M., Kellert, E. and Gorham, L. W.: Rupture of right auricle of heart. *Am. Heart J.*, 9: 324-332 (Feb.) 1934.
5. Dozzi, D. L.: Unsuspected coronary thrombosis in patients with hemiplegia. *Ann. Int. Med.*, 12:1991-1995 (June) 1939.
6. Elidsoff, Benjamin: Aneurysm and thrombosis of left coronary artery. *J. Mt. Sinai Hosp.*, 2:26, 1939.
7. Friedman, S. and White, P. D.: Rupture of heart in myocardial infarction. *Ann. Int. Med.*, 21:778-782 (Nov.) 1944.
8. Hellerstein, H. K. and Martin, J. W.: Incidence of thrombo-embolic lesions accompanying myocardial infarction. *Am. Heart J.*, 33:443-452 (Apr.) 1947.
9. Hilker, A. W.: Shoulder-hand syndrome. *Ann. Int. Med.*, 31:303-311 (Aug.) 1949.
10. Jetter, W. W. and White, P. D.: Rupture of the heart in patients in mental institutions. *Ann. Int. Med.*, 21:783-802 (Nov.) 1944.
11. Kerr, J. D.: Complete heart block. *Lancet*, 2:1066 (Sept.) 1937.
12. Klaines, M. D., Altschule, M.D.: Prolongation of PR interval in patients with paroxysmal auricular fibrillation and flutter following myocardial infarction. *Am. J. M. Sc.*, 203:215 (Feb.) 1942.
13. Levine, S. and Rosenbaum, F.: Prognostic value of various clinical and electrocardiographic features of acute myocardial infarction. *Arch. Int. Med.*, 68: 1215 (Dec.) 1941.

(Continued on Page 1418)

Some Observations on the Rheumatic Fever Control Program of the Michigan State Medical Society

By Leon De Vel, M.D.
Medical Coordinator
Grand Rapids, Michigan

THE RHEUMATIC Fever Control Program of the Michigan State Medical Society was conceived in 1945 at a meeting of the Preventive Medicine Committee of the Michigan State Medical Society, when this committee became aware of the large number of rejections for cardiovascular disease reported by the Selective Service Boards. A large proportion of these rejections were for rheumatic valvular heart disease. It further developed upon closer study that many of the rejectees, while suffering the evident after-effects of rheumatic disease, were unable to give a past history of acute rheumatism; their original rheumatic episode had been such as to escape recognition, either by themselves or by their physician. The committee was also impressed by current general mortality statistics which showed rheumatic fever and rheumatic heart disease to be the principal causes of death from disease during the childhood period. A sub-committee was then appointed to study the problem and submit a plan to the Council of the Michigan State Medical Society on ways and means by which rheumatic fever might be combatted in Michigan. The sub-committee's plan for a state-wide program of education, diagnostic and consultation services, case-finding and follow-up was approved by the Council of the Michigan State Medical Society in July, 1945.

Objective

The ultimate objective of this as of any other rheumatic fever control program is the eventual eradication of rheumatic fever and its sequelae of heart disease. Such is not in prospect in the foreseeable future and will require a vast amount of further research into the fundamental causes of the disease. The research aspects of the rheumatic fever problem are therefore left to other auspices.

The immediate objective is to strive for the fullest application of our present considerable knowl-

edge of the disease to the individual case or suspected case in order to provide the best care modern medicine has to offer at the earliest possible time. The Michigan Rheumatic Fever Control Program aims to gain the immediate objective through a plan of education—both lay and professional—and through its Rheumatic Fever Diagnostic and Consultation Centers for diagnosis, advice on management and follow-up.

Fundamental Principles

The fundamental principles governing the development of Michigan's Rheumatic Fever Control Program are aptly stated by the President of the Michigan State Medical Society in the following words: "The family doctor is the person best qualified for the care of the individual patient. This is the philosophy of the Michigan State Medical Society. All of its activities are directed to this end. A timely example of this is the Michigan Rheumatic Fever Control Program. It was established and has continued under the major premise that the family physician is and must remain the central figure in the plan. The program is beamed at the patient through the family physician. It is a highly specialized postgraduate undertaking whereby both physician and patient come to understand the total problem of the disease: the care, education, rehabilitation and job placement within the capabilities of the individual patient's heart. The physician—as the central figure—sees the whole patient and the whole problem. He brings to bear all the specialized services the community has to offer. The main purpose of the plan is the education of the physician in the intricacies of a disease which is not yet completely known, for from this improved understanding comes the best possible care of the patient."

Scope

In a double program of education and care it is fully realized that the problems faced by the rheumatic or cardiac child or adult are not exclusively medical. The additional needs, other than strictly medical, which should be met in the total care of the total patient are psychological, social, educational, and for rehabilitation, as summarized in Table I.

The conscientious physician who has the welfare of his patient at heart will act as principal adviser in care and management, and will, in many in-

RHEUMATIC FEVER CONTROL PROGRAM—DE VEL

TABLE I. THE NEEDS OF THE RHEUMATIC OR CARDIAC PATIENT ARE NOT EXCLUSIVELY MEDICAL

Needs	Purpose	Who Can Supply	Where
Medical Needs	For best modern medical care	Family physician Specialist Special nurse Visiting nurse Public Health nurse School nurse	Office Home Hospital Convalescent home Rheumatic Fever Center Visiting Nurse Association Board of Health School Nursing Service
Psychologic Needs	To aid in adjustment to chronic disease	Family physician Psychiatric consultant Occupational therapist	Office Home Hospital Convalescent home Child Guidance Clinic
Social Needs	To aid in social and economic adjustment	Social service worker	Hospital Social Service Community Social Service Mich. Crippled Children Comm. Voluntary Agencies Society for Crippled Children
Educational Needs	For normal schooling For preparation for a suitable job To prevent the need for rehabilitation	Teacher Special teacher Vocational expert	Board of Education Home teaching Special teaching Vocational Guidance
Rehabilitation	To re-train the individual to a job better suited to his limitations	Rehabilitation expert	State Rehabilitation Service Voluntary Agencies

The Family Physician is the Key Person in the Plan

stances, himself be able to meet all of his patient's needs. For the solution of the more difficult problems he will guide his patient to one or more of the many specialized agencies existing in every community to deal with special situations.

Finance

While the Rheumatic Fever Control Program of the Michigan State Medical Society is a voluntary one, depending on the cooperation and interest of physicians who are qualified in their special fields, and while these physicians contribute of their time and knowledge without compensation as their share in an educational and public health program undertaken by their Medical Society, there still remain certain expenditures to be met for administrative purposes: secretarial help, record forms, letterheads, postage, office supplies, the printing of pamphlets and circulars, including also the services of the Medical Coordinator appointed in 1949 to serve as a liaison agent between the Rheumatic Fever Committee of the Michigan State Medical Society and its Rheumatic Fever Centers and cooperating agencies. Funds to meet these administrative expenditures have been obtained from sources outside the Michigan State Medical Society. The Michigan Society for Crippled Children and Adults, Inc. (Easter Seals) was the major contributor during the first three years of the program. The major share is now contributed by the Michigan Heart Association, on the recommen-

TABLE II. FINANCING THE MSMS RHEUMATIC FEVER CONTROL PROGRAM
Five-Year Period: 1946 to 1950

Contributed By:	
The Michigan Society for Crippled Children and Adults Inc., (Easter Seals)	\$58,140.14 (47.5%)
The Michigan Heart Association	59,927.03 (49.0%)
Michigan Arthritis & Rheumatism Foundation	4,500.00 (3.5%)
Michigan State Medical Society	No funds allocated**
**Services only: Cooperating physicians have donated all services gratis.	

dation of its Program Activities Committee. See Table II for a statement of sources of funds for the five-year period, 1946 to 1950 inclusive.

Implementation

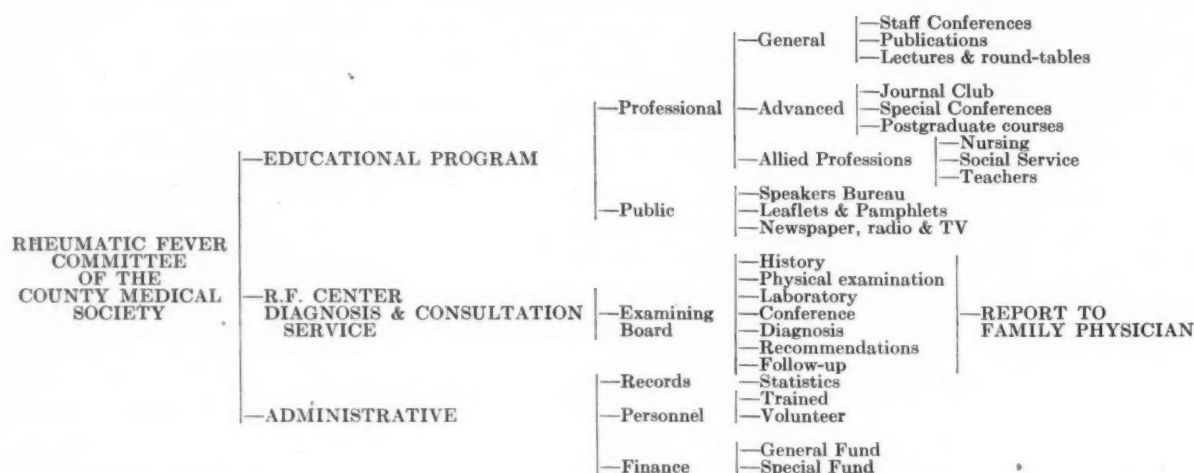
The Rheumatic Fever Control Program of the Michigan State Medical Society is essentially a decentralized activity based on the participation and cooperation of the several County Medical Societies located in cities which are the logical health and medical centers for their general geographic area, where qualified consultants, ancillary services and laboratory and hospital facilities are readily available for the operation of a complete program. Local Rheumatic Fever Committees are appointed by the President or the Board of Directors of the local County Medical Society, in cooperation with the over-all Rheumatic Fever Control Program of the Michigan State Medical Society. Funds for their administrative needs are supplied by the State Committee. Rheumatic Fever Committees are active in the following Michigan cities: Alpena, Ann Arbor, Bay City, Detroit,

RHEUMATIC FEVER CONTROL PROGRAM—DE VEL

Grand Rapids, Jackson, Kalamazoo, Lansing, Marquette, Muskegon, Petoskey, Pontiac, Saginaw and Traverse City. Local committees have not yet been organized in the following cities:

in the preparation and distribution of Desk Reference Cards of rheumatic fever; in the creation of four Annual Postgraduate Fellowships for the Study of Rheumatic Fever, to be awarded annual-

TABLE III. MSMS COMMITTEE ON RHEUMATIC FEVER CONTROL ORGANIZATION PLAN FOR A RHEUMATIC FEVER PROGRAM



Benton Harbor-St. Joseph, Battle Creek, Flint, Port Huron and Sault Ste. Marie. Each serves not only its own city, but also the immediately surrounding area. Table III is a schematic diagram of the activities of the Rheumatic Fever Committee of a County Medical Society, consisting of its educational, service, and administrative features.

A better understanding of the nature, course and management of rheumatic fever and rheumatic heart disease by every practicing physician, specialist as well as general practitioner, constitutes the foundation upon which progress may be built. The professional educational program of the MSMS Rheumatic Fever Committee has consisted in the publication in the JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY of a series of comprehensive articles on the various aspects of the rheumatic fever problem, written by nationally known authorities under the sponsorship of the Michigan Heart Association and the Rheumatic Fever Committee of the MSMS; in the presentation of panel discussions or formal papers on the subject of rheumatic fever before County Medical Societies; in efforts to stimulate hospital staffs to take up the discussion of rheumatic fever and rheumatic heart disease more frequently and more comprehensively in their staff and clinicopathological conferences; in the preparation and distribution of an outline of rheumatic fever entitled "Doctor's Outline Manual of Rheumatic Fever";

ly by the MSMS Rheumatic Fever Committee to qualified applicants for attendance at regularly organized postgraduate courses in rheumatic fever and rheumatic heart disease approved by the Committee.

Education of the allied professions—nurses, social workers, occupational therapists, teachers—through formal lectures and conferences is being developed as rapidly as possible, largely under the auspices of local rheumatic fever committees, and as a means of establishing liaison between the different groups.

No rheumatic fever control program aimed principally at early recognition can be successful without a modicum of lay education. If a parent should fail to recognize certain early signs or manifestation of illness which would cause him to visit his family doctor, the world's best physician could not help the child. On the other hand there is clearly a danger of building up fear complexes which in some individuals may be a factor in the creation of psychological cardiac cripples. While a pamphlet on rheumatic fever for parents is available for distribution—through the various 'Rheumatic Fever Centers, in doctors' offices, and through the cooperation of the Michigan Department of Health—it is believed that education of the public is best applied by the method of direct contact: by the family physician in home and office; with parents in PTA Study Groups, Health Clubs and the like.

A series of colored transparencies with recorded commentary has been produced in cooperation with the Michigan Crippled Children Commission for presentation by competent persons to such audiences: the filmstrip gives some detailed information on the early signs that might indicate rheumatic fever and cause the patient to visit the doctor, on the procedure of examination by the physician, on the home treatment including bedside care, occupational therapy and home teaching, and on the Rheumatic Fever Control Program of the MSMS. The presentation stresses the hopeful aspects of the rheumatic fever problem.

Rheumatic Fever Diagnostic and Consultation Centers

The Rheumatic Fever Diagnostic and Consultation Centers established in the cities listed above are the feature project of the Michigan Rheumatic Fever Program, in cooperation with the local County Medical Societies and their Rheumatic Fever Committees. They constitute the control core of the project: from them radiate all other activities in the field of rheumatic fever control. They are to a large extent autonomous in determining the extent and scope of their activities but usually conform to the general pattern suggested by the MSMS Rheumatic Fever Committee.

The Rheumatic Fever Diagnostic and Consultation Centers accept patients for diagnosis and/or consultation only on direct referral by the family physician: for diagnosis of the suspected case or to establish the presence or absence of activity of the rheumatic process or to determine the exact nature of cardiac involvement; for consultation in regard to management: questions of drug therapy, of restriction of activity, attendance at school, surgical procedures, sulfa prophylaxis, convalescent home care, rehabilitation, referral to other agencies and other problems. Final report of the panel of examining consultants is rendered to the referring physician giving not only their diagnosis, but also specific recommendations for treatment, to be supervised and carried out by him. The family physician may continue to refer the patient to the Center for further observation and study if he so desires, and such is indeed frequently requested by the consulting panels in the more difficult cases.

Examination at the Rheumatic Fever Diagnostic and Consultation Center consists of a complete history, laboratory work including urinalysis,

complete blood count, sedimentation rate, electrocardiogram and x-ray with fluoroscopy. Physical examinations performed by each of a three-man consulting panel—one internist-cardiologist, one pediatrician, and one otolaryngologist or other consultant. The examiners then hold a conference in which the case is fully discussed and final decisions and recommendations made, Table IV-A and B shows the two sides of the standard examination form adopted by the MSMS Committee.

The Rheumatic Fever Diagnostic and Consultation Centers perform an educational as well as a service function. Service to the family physician and his patient by offering diagnosis and consultation reasonably within the reach of every rheumatic or suspected rheumatic within the State. Education of the referring physician in the reports rendered to him, and of the panel of consulting examiners by affording them an opportunity to study in detail a number of problem cases which they otherwise would not have seen. An active rheumatic fever program in any community also creates a general awareness of the possibility of the disease which tends to bring people into their doctors' offices for examination.

Some Statistical Observations

Examination of the records of 614 admissions to two Rheumatic Fever Diagnostic and Consultation Centers reveals the following observations of interest:

Sex distribution: 51.5 per cent female;
48.5 per cent male.

Age distribution: Under age 16: 84 per cent;
age 16 and over 16 per cent.

The family history was positive for rheumatic fever and/or rheumatic heart disease in the immediate family in 35 per cent. The family history in the rheumatic group was also positive in 35 per cent.

The 614 admissions had 908 examinations performed. Twenty-three per cent had more than one examination.

Rheumatic fever, all classes, was diagnosed 271 times or in 44 per cent of admissions. The rheumatic process was declared active in 95, quiescent in 127. Rheumatic fever could not be ruled out in 49 cases.

The cardiac diagnosis was mitral insufficiency

RHEUMATIC FEVER CONTROL PROGRAM—DE VEL

TABLE IV-A

MICHIGAN STATE MEDICAL SOCIETY—COMMITTEE ON RHEUMATIC FEVER CONTROL

REPORT of the GRAND RAPIDS RHEUMATIC FEVER DIAGNOSTIC and CONSULTATION CENTER,
129 East Fulton Street, Grand Rapids 2, Michigan

Name:	Date: Sex:	Date of birth:	Number: Age:
Address:			
Father's name & occupation:			Weekly wage:
Physician's name & address:			

DIAGNOSIS

Class. (check):	Functional: I II III IV	Therapeutic: A B C D E	Poss:	Pot:
Disposition (check):	Home	Hospital	Convalescent Home	Return

RECOMMENDATIONS

Activity:
Dietary:
Medication:
Other:

FAMILY HISTORY

Parents (age & health):
Siblings (age & health):
Rheumatic fever or rheumatism:
Heart Disease:
Other: Tbc., cancer, diabetes, etc.

PERSONAL MEDICAL HISTORY

PAST ILLNESSES:

Operations:	Accidents:	Immunizations:
DAILY DIETARY:	No. glasses of milk:	No. servings of meat:
Raw veg.:	Cooked veg.:	Citrus fruit:
		No. of eggs:
		Vitamins:

in 103 (38 per cent), mitral stenosis in twenty-three (8 per cent), other (A-V block, arrhythmia et cetera) in 16 (6 per cent). No cardiac lesion was found in 123 (45 per cent) of all cases diagnosed rheumatic fever (all classes).

Congenital heart disease was diagnosed in 31 (5 per cent).

A functional murmur was present in 217 (35 per cent) of all admissions.

The sedimentation rate was found to be elevated in 164 (27 per cent) of all admissions. When

the diagnosis was rheumatic fever, the sedimentation rate was found to be elevated in 84 (31 per cent).

Electrocardiograms were made in 62 per cent of all admissions, and found abnormal by the usual standards in 11 per cent, abnormal including the corrected QT interval in 23 per cent. When the diagnosis was rheumatic fever the electrocardiogram was reported abnormal in 19 per cent and 49 per cent respectively.

X-ray and fluoroscopy were performed in 309

RHEUMATIC FEVER CONTROL PROGRAM—DE VEL

TABLE IV-B

PRESENT ILLNESS:

Checklist: Date of onset. Early symptoms. Sore throat. Fever. Pain. Joints. Nosebleed. Fatigability. Nervousness. Personality change. Appetite. Appearance. Loss of weight. Number of attacks or recurrences. Skin rash. Nodules. Previous diagnosis. Prior lab. reports. Other.

PRESENT SYMPTOMS:

Checklist: Fever. Joint pain. Muscle pain. Abdominal pain. Chest pain. Nose bleed. Appearance. Skin rash. Appetite. Loss of weight. Fatigue. Shortness of breath. Nervousness. Emotional instability. Other.

MEDICAL EXAMINATION

Temp.:	Pulse:	Blood Pressure:	Vital Cap.:	Ht.:	Wt.:		
General appearance:	Pallor.	Dyspnea.	Cyanosis.	Edema.	Joints.	Skin rash.	Chorea.
Tonsils & adenoids. Cervical adenitis.							
Oral hygiene:							
Heart size:							
Rate & rhythm:							
Thrills:							
MURMURS:	Location.	Timing.	Intensity.	Quality.	Transmission.	Heart sounds.	
Other: Abdomen. Liver. Spleen.							
X-ray & Fluoroscopy:							

LABORATORY

Sed. rate:	Hgb. (gms):	RBC:	WBC:	P.	L.	Eos.
Urinalysis:	Sp. Gr.:	React.:	Alb.:	Sug.:	Micro.:	
Throat culture:	Agglutinations:					
Electrocardiogram:						

(50 per cent) of all admissions, and found abnormal in 24 per cent. When the diagnosis was rheumatic fever, the x-ray was abnormal in 30 per cent.

Physician participation in the Rheumatic Fever Control program was as follows: There were 484

physicians in the general geographic area. Of these, 222 (46 per cent) had referred one or more patients to the Centers for examination. A total of 117 had referred more than one case. Fifty-four physicians acted as consultants in the operation of the two Centers.

Rheumatic Fever

By Robert T. Lyons, M.D. and
Donald S. Smith, M.D., F.A.C.P.

Pontiac, Michigan

AN UNUSUAL increase in the number of cases of rheumatic fever seen at Pontiac General Hospital, a 200-bed general hospital in an industrial community, has provoked this study. Using the criteria commonly accepted (i.e.: *major criteria* of carditis, arthralgia or migrating arthritis, chorea, subcutaneous nodules, history of previous attacks; and the *minor criteria* of fever, tachycardia, precordial pain, abdominal pain, rashes, epistaxis, pulmonary findings and laboratory findings), a study of cases over the past three and one half years (January 1, 1948, through June 30, 1951) was undertaken. This revealed twelve cases in 1948, twelve in 1949, fourteen in 1950, and thirty in the first half of 1951.

This total of sixty-eight cases had a death rate of 5.88 (four cases, of which three had postmortem examinations) and an admission incidence, exclusive of maternity and newborn, of 0.29 per cent. Each admission averaged 15.8 hospital days—the longest forty days and the shortest two days. No patient was included more than once in this series, although approximately 20 per cent were hospitalized more than once for acute rheumatic fever at this hospital alone. Each invariably had an elevated sedimentation rate and, with the exception of two patients, all had fever while in the hospital. A percentage of 36.8 (twenty-five cases) had abnormal electrocardiograms, exclusive of prolonged QTc intervals, while observed; 77.9 per cent (fifty-three cases) had joint signs or symptoms when seen, and 4.4 per cent (three cases) were admitted because of abdominal pain.

In 1947 a Rheumatic Fever Consultation and Diagnostic Center was established in Pontiac at this hospital. From 1948 through 1950 only thirty-five patients were seen. Of these, four were in the acute phase, seven were inactive, and twenty-four were non-rheumatic. In the first six months of 1951, no patients were referred to the Center. We believe this is due, in large part, to lack of publicity to the local physicians concerning both the

disease and the clinic services available. That the importance of rheumatic fever as a community problem is being overlooked is evidenced by the fact that, during this period of three and one-half years, although sixty-eight acute cases were seen at General Hospital, only forty-eight cases were reported to the county and city health authorities, and this number included both acute rheumatic fever and chronic rheumatic valvular disease. The discrepancy between the number seen and the number reported is even greater considering that Pontiac General Hospital handles less than 50 per cent of the patient load of Oakland County.

The relatively high incidence of cases hospitalized this year, actually 0.9 per cent of hospital admissions exclusive of maternity and newborn, may be due to an economic paradox which exists in this community—90.3 per cent of these cases had prepaid hospital insurance—a rate probably responsible for the large number of cases hospitalized this year. Some of these were undoubtedly admitted solely for therapy with ACTH. Prepaid hospital insurance in any form, by bringing to light a higher incidence of this disease, will change prevalent concepts of public health. A definite correlation has also existed concerning scarlet fever for, according to county and city health authorities, the number of cases of scarlet fever reported last year and this year has risen from 501 in all of 1950 to 1,077 cases in the first half of 1951.

A positive diagnosis of rheumatic fever is frequently difficult to make as evidenced by the finding of mitral disease in adolescents and young adults who have no previous history of acute rheumatic fever. On the other hand, a diagnosis of rheumatic fever in a patient made without the previously established criteria may well jeopardize his mental, social and economic future. So far, the Rheumatic Fever Consultation and Diagnostic Center has helped this type of patient more frequently than the one in whom it has substantiated a positive diagnosis, thus releasing him from serious socio-economic implications. This point, however, should not be the main purpose of the Center. Additional publicity to the physician in the area is undoubtedly the answer to the question of how to make the Center fulfill its aim of treatment and prevention of the disease.

With the advent of ACTH on the open market, this drug was given to a number of these patients in the acute phase. It was immediately apparent

From the Department of Internal Medicine, Pontiac General Hospital, Pontiac, Michigan.

that all could not afford adequate treatment. Consequently, with no enforceable restrictions, dosage was varied in wide ranges, most frequently depending upon the patient's response to the initial few doses. Sixteen patients had trials of ACTH and eleven of these were followed personally with the co-operation of the attending physicians. One of these patients succumbed in the acute attack. The hormone was administered for twelve hours prior to death. A point that deserves attention is that electrocardiographs in this patient were normal exclusive of prolonged QTc intervals. This patient showed myocarditis and valvulitis at postmortem examination. This case is presented to point out that the typical course of acute rheumatic fever is entirely unpredictable and may at any time become fulminating. It was noted previously that the average hospital stay was 15.8 days. This is far below the limits for adequate supervised care. In review, it was found that only 22 per cent of the sixty-eight cases had had specialty consultation.

Case 2059.—First admission—G.M.W., a five and one-half-year-old white male child, was first admitted to the hospital on January 9, 1951, with the chief complaint of fever and swelling of the right ankle of several days' duration. There was no history of previous chorea, joint, heart or kidney disease. On admission, temperature was 102.4° F., pulse rate 120 and respiration rate 18. He was undernourished, pale and acutely ill. The heart was not enlarged. There was a rough systolic murmur at the apex. The right ankle was moderately tender, swollen and painful. The chest x-ray was normal. Hb. 12.45 grams, Rbc 4.32 million, Wbc. 8,900 with a slight shift to the left. The sedimentation rate, on admission, was 41 mm. corrected and five days later was 32. Urine examination findings were normal. The electrocardiogram on admission was judged within normal limits. The patient was given 40 grains of aspirin daily and confined to bed. During the hospital stay the swelling of the right ankle gradually subsided and the apical systolic murmur was reduced considerably in intensity. However, throughout the course of the hospital stay he ran a low-grade temperature. The patient was advised to indulge in graduated activity at home and was discharged eleven days after his admission.

Second admission.—The patient was admitted from the emergency room on May 26, 1951, at which time he was semi-comatose, pale and slightly cyanotic. The parents stated that he was evidently "doing well" until the previous day when he vomited several times and complained of feeling weak. The mother had been taking the patient's temperature at least daily since the first discharge and stated that, although he had occasional sweats, he had no fever. On the day of admission, while in bed, he suddenly lost consciousness. Examination on

admission revealed a temperature of 99° F. rectally, pulse rate of 76, and respiration rate of 24. There was a harsh systolic murmur over the entire precordium. There was no evidence of congestive heart failure. The impression at that time was acute rheumatic fever with probable mural thrombi and embolization of the brain. A blood culture was taken and he was given 150 mgms. of Dicoumural and started on ACTH—20 mgms. every six hours. An electrocardiogram at that time was well within normal limits except for a prolonged QTc interval.

The patient's condition grew steadily worse, the temperature rose to 106 degrees and, following a convulsion, he expired twelve hours after admission. Postmortem examination revealed, grossly, that the pericardial cavity was free of abnormality, although the greatest transverse diameter of the heart was moderately increased. The heart weighed 155 grams. The coronary arteries and myocardium were grossly normal. The mitral valve was thickened, red and edematous with a line of fine pinkish granulation tissue at the line of closure. Under water, small fibrin strands were seen to be adherent to these granulations. The aortic valve was slightly thicker than would be expected. The microscopic report stated that the sections of the myocardium showed rather extensive changes varying from perivascular edema and fibrinoid degeneration to collections of mononuclear cells and, in some instances, large mononuclear elements within coffin-shaped nuclei. In no instance was this cellular infiltration sufficiently localized to be called a true Aschoff's nodule; however, these were undoubtedly the acute changes of rheumatic myocarditis. Gross and microscopic examination of the brain failed to reveal any abnormality.

Because the affliction exists for days or weeks before ACTH can be administered, its use cannot exclude valvular damage with any surety even in the first attack. Even if it could be given early, symptomatic relief by its use: i.e., subsidence of joint signs and symptoms, fever, and tachycardia, is not necessarily related to subsidence of valvular activity in the acute phase. We believe that the only reliable criterion, as far as laboratory procedure is concerned, is the return of the sedimentation rate to normal limits. The following case gives evidence to these facts.

Case 77722.—This ten-year-old white girl was admitted to the hospital on February 1, 1951, with the chief complaint of fever of ten days' duration and pain in the left wrist of three days' duration. Past history revealed a possible episode of chorea at the age of six years. On admission, the temperature was 102° F., pulse rate 90, and respiration rate 24. Physical examination revealed a white girl of pre-puberty who was toxic, feverish and complaining of a painful left wrist. This was swollen, red, warm and exquisitely tender. The right wrist was involved to a lesser extent. There was a soft blowing systolic murmur over the entire precordium, loudest at the apex. Study of the blood and urine was

normal except for a slight leukocytosis. The sedimentation rate was 30 mm. corrected. Three electrocardiograms during her hospital stay showed an initial PR interval of .22 seconds which shortened to .18 seconds before discharge. She was begun on ACTH on February 7, 1951, at 10 mgs. every six hours and continued at that dosage for eleven days. Marked symptomatic improvement was noted after starting the hormone. On discharge, the sedimentation rate was 21 mm. corrected. Although intently listened for, a diastolic murmur was not heard at any time during her hospital stay. She was discharged thirty-four days after admission.

On arriving home she was confined to bed for three weeks, during which her mother noted an occasional fever of about one degree. The patient was seen five months later by one of us, at which time there was noted a typical rumbling diastolic over the apex and an opening mitral snap, in addition to the blowing systolic murmur heard previously. The patient at this time is asymptomatic.

It is not implied that larger doses of ACTH for prolonged periods of time may not inhibit valvular deformities. However, treating for symptomatic relief, including the signs of fever and tachycardia, if present, is valueless. Several other cases in this series add impetus to this fact. Proof that ACTH has been beneficial in any one of these followed cases has been lacking, even when given up to 200 mgs. (per twenty-four hours) for initial dosage and treated for as long as four weeks.

Conclusions

1. An increase in acute rheumatic fever cases seen in Oakland County has been far and above the number reported, although this is a reportable disease. This increase has been paralleled with the increase in scarlet fever reported in the county.

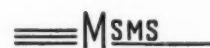
2. This increase in number in 1951 has made this disease a serious community problem as evidenced by the incidence of hospital admission.

3. The Rheumatic Fever Diagnostic and Consultation Clinic is not being used to advantage at the present time. This, we believe, is due to lack of publicity, as far as the doctors in the community are concerned.

4. The high incidence of prepaid hospital insurance in this industrial community and the advent of ACTH have probably been responsible for the number seen in the hospital this year.

5. Hospital insurance, when it becomes widespread in other communities, may well change current knowledge and statistics of the incidence of rheumatic fever.

6. Evidence is presented that symptomatic relief by the use of ACTH is not necessarily related to the cessation of valvular activity.



OASI vs. ASSISTANCE

The following table shows the number of persons sixty-five and older receiving Old Age and Survivors' benefits and old age assistance, and the comparative cost of each program, from 1940 to the present (000 omitted):

Year-End	OASI		Old Age Assistance	
	Number	Monthly Payment	Number	Monthly Payment
1940	147	\$ 2,992	2,066	\$ 41,926
1941	274	5,558	2,234	47,589
1942	368	7,546	2,227	52,120
1943	448	9,304	2,149	57,298
1944	567	11,872	2,066	58,726
1945	777	16,552	2,056	63,489
1946	1,052	22,700	2,196	77,531
1947	1,318	28,811	2,332	87,270
1948	1,591	35,364	2,498	104,978
1949	1,951	44,440	2,736	122,458
1950	2,599	101,579	2,787	120,072

Source: Federal Security Administration.

COMPLICATIONS OF CORONARY OCCLUSIVE DISEASE

(Continued from Page 1409)

- Margulies, G. S. and Levine, E. B.: Thromboembolic phenomena in myocardial infarction. *Ann. Western Med. & Surg.*, 4:18-21 (Jan.) 1950.
- Master, A. M., Dack, S. and Jaffe, H.: Disturbances of rate and rhythm in acute coronary artery thrombosis. *Ann. Int. Med.*, 11:735 (Nov.) 1937.
- Master, A. M., Dack, S. and Jaffe, H.: Bundle-branch and intraventricular block in acute coronary occlusion. *Am. Heart J.*, 16:283 (Sept.) 1938.
- Master, A. M., Dack, S. and Jaffe, H.: Partial and complete heart block in acute coronary artery occlusion. *Am. J. M. Sc.*, 196:513 (Oct.) 1938.
- Moragues, V.: Spontaneous rupture of papillary muscle of heart. *Am. Heart J.*, 17:106-110 (Jan.) 1939.
- Schwartz, S.: Auriculoventricular dissociation and the Adams-Stokes syndrome in acute coronary vessel closure. *Am. Heart J.*, 11:554 (Oct.) 1936.
- Tedeschi, C. G., Stevenson, T. D., Levenson, H. M.: Abscess formation in myocardial infarction. *New England M. J.*, 243:1024-1027 (Dec. 28) 1950.
- Weber, M. D.: Perforation of the interventricular septum following infarction. *Ann. Int. Med.*, 19: 973-89 (Dec.) 1943.
- Wright, I. S., Marple, C. D. and Beck, D. F.: Anticoagulant therapy of coronary thrombosis with myocardial infarction. *J.A.M.A.* 138:1074, 1948.

Renal and Neurogenic Factors in Hypertension

An Experimental Study

By W. J. Kenfield, David F. Bohr,
R. R. Paterson and H. J. Kitto

Ann Arbor, Michigan

EXACT information regarding the etiology and the pathogenesis of sustained arterial hypertension in man is still wanting. However, both clinical and experimental studies have indicated that there are certain factors so closely related to the development of this disease that they must be considered in any hypothesis dealing with its cause. Those factors receiving the greatest amount of consideration in the current literature are the disturbances in control of blood pressure arising in the kidneys, the central nervous system or the adrenal cortex. The study reported here deals with a possible relation between renal and neurogenic factors concerned in the development of hypertension.

Experimental evidence incriminating the central nervous system as the site of the fundamental change responsible for hypertension of a type similar to human essential hypertension is meager. It has been demonstrated, for instance, that exposure of certain rats to the sound of air blast may produce an elevation in blood pressure.⁵ Furthermore, Hoff and his co-workers⁸ have observed that stimulation of a specific region of the frontal lobe in the cat will cause an elevation in blood pressure, and when these stimuli are repeated at frequent intervals for several weeks, the animals developed organic renal changes which are interpreted as being due to renal ischemia. On the other hand, these results are not entirely in keeping with the findings of Kubicek and Visscher⁹ who carried out a chronic stimulation of the sympathetic nerves supplying the kidneys in dogs. These authors obtained arterial hypertension as long as the stimulus was continuous, but on cessa-

tion of stimulation, the pressure returned to normal. Experimentally, hypertension will result from either marked cerebral ischemia or destruction of the blood pressure buffer nerves from the carotid sinus and the aortic arch. The hemodynamics of this type of hypertension is so different from that of clinical essential hypertension that the two must be considered to differ etiologically.¹

Clinically, evidence that the central nervous system may have some fundamental significance in the development of essential hypertension is more impressive. Thus, this disease occurs predominantly in individuals of a quite specific personality type.⁷ Once the disease is present, it is exacerbated by nervous strain. Furthermore, the significant improvement commonly seen following sympathectomy¹⁵ may be used as evidence that this neurogenic vascular control is of some importance in perpetuating the hypertension.

When the kidney is considered as a cause of hypertension, it is found that the experimental evidence is more convincing. When a proper degree of renal ischemia is produced either by partially occluding the renal artery⁶ or by constrictive perinephritis,¹² arterial hypertension will result. The hemodynamics of this hypertension cannot be distinguished from that of essential hypertension in the human being.^{1,17} A clinical analogue of experimental renal hypertension is seen in cases where the renal artery is partially occluded by a tumor or thrombus.² This form of renal hypertension is clinically similar to essential hypertension except that it is frequently cured by unilateral nephrectomy.¹³

It was initially considered that the demonstration of the renin system originating in these ischemic kidneys might furnish the fundamental key to explain the development of arterial hypertension. This explanation seemed more convincing when renin was found in amounts sufficient to be responsible for a rise in blood pressure in the blood of dogs with early experimental renal hypertension.³ When the experiments were carried out a little further, however, the renin could no longer be found. Furthermore, in chronic essential hypertension in humans, the renin and hypertensin content of the blood is no different from that of a normotensive subject.¹⁴

Thus, although disturbances of either the kidneys or the central nervous system may be implicated in the development of essential hyperten-

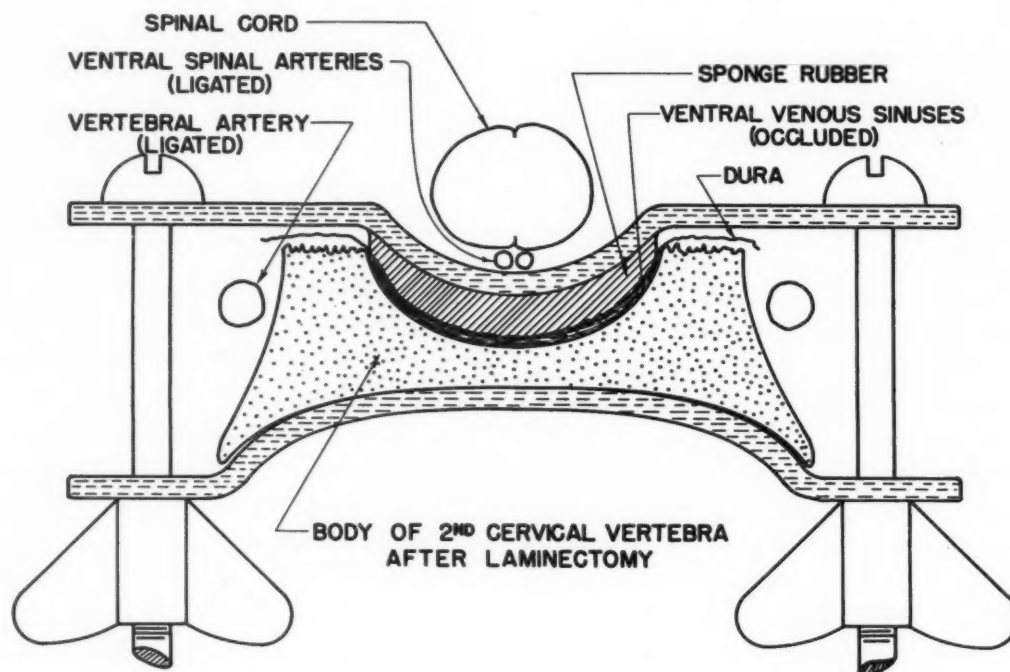
From the Physiology Laboratory, University of Michigan, Ann Arbor, Michigan.

This study was supported by grants from the Life Insurance Medical Research Fund and from the Michigan Heart Association.

A preliminary report of this study was presented at the Fall Meeting of the American Physiological Society in 1951.

sion, neither mechanism, as it is known today, seems sufficient in itself to complete the clinical picture of essential hypertension. Either one could be the site of the process that initiates the chain

blood pressure. In our current study we have explored the possibility of such a mechanism by establishing experimental conditions in which we could make direct observations of the effects of



CLAMP FOR OCCLUDING VENTRAL VENOUS SINUSES

Fig. 1. Technique for obtaining circulatory isolation of the head at the level of the second cervical vertebra.

of events that leads to this disease. Renal ischemia initiates the production of renin in amounts sufficient to cause hypertension, but, with persistent ischemia, renin production stops while the hypertension persists.³ Therefore, it is pertinent to ask whether renin or any renal pressor substance might act elsewhere to initiate a secondary mechanism which in turn perpetuates the hypertension. The possibility that the central nervous system may take over the responsibility for perpetuating the disease is suggested by several lines of evidence. Doek⁴ has demonstrated that destruction of neurogenic vasomotor activity in the rabbit with experimental renal hypertension causes a marked fall in blood pressure. Ogden¹¹ has presented evidence to indicate that sympatholytic agents are more effective in lowering blood pressure late in this disease than during the earlier phase when it is considered to be caused by humoral pressor substances. Perhaps these substances act indirectly through neurogenic channels to cause a persistent elevation of

renal pressor substances on the central neurogenic control of blood pressure.

The effect of renal pressor substances on the central control of blood pressure was investigated by cross transfusion experiments in which blood from a donor dog was circulated only to the isolated head of a recipient. In this manner, the intact donor animal and the isolated head of the recipient were subjected to the same circulating renal pressor substances. The spinal cord and vagus nerves of the recipient were left intact. Since no blood passed from the head of the recipient dog to the body of this animal, any change in blood pressure observed in the body could be attributed to the action of these substances on the central nervous system.

Method

Mongrel street dogs were used. The weight of the donor varied from 17 to 27 kilograms; that of the recipient from 9 to 15 kilograms. Morphine

and urethane anaesthesia were used. Simultaneous blood pressure recordings were obtained from the femoral artery of the donor, from the carotid artery of the isolated head of the recipient and

according to the method of Nowak.¹⁰ A pump was interposed between the common carotid arteries of the donor and the recipient (Fig. 2). This pump could be adjusted to deliver blood from

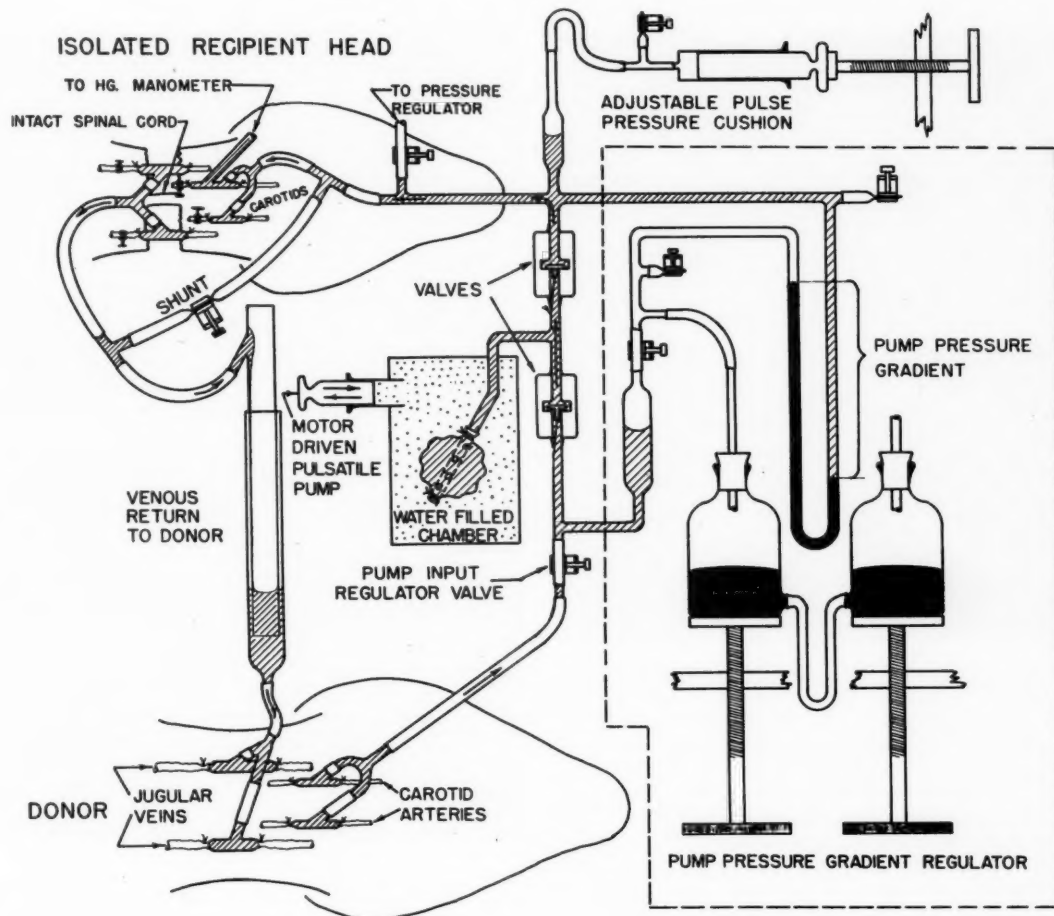


Fig. 2. Pump system for delivering blood through the isolated head of the recipient at either a constant volume flow or a constant pressure.

from the femoral artery of the body of the recipient. Respirations were recorded by a pneumograph in both animals.

The donor animal was left intact except for the cannulations necessary for cross transfusion and for recording blood pressure. The head of the recipient animal was isolated at the level of the second cervical vertebra. Figure 1 illustrates the manner in which this isolation was accomplished. At the time of the experiment the only tissues remaining intact between the head and the body were the spinal cord, the vagus nerves, the plexus of vessels in the arachnoid and pia and the most anterior portion of the second cervical vertebra. As illustrated in Figure 1 the vertebral and ventral spinal arteries were ligated. The ventral spinal venous sinuses were occluded by a clamp

the donor to the recipient head at either a constant rate or at a constant pressure. The recipient was placed above the donor so that the venous blood returned from the isolated head to the donor by gravity. Rigid criteria were established for the isolation of the head and the intactness of the nervous system. Evans blue dye was injected into the donor-isolated head circuit, and the recipient body blood was checked at intervals for the presence of the dye. In this manner, it was demonstrated that blood leakage from the isolated head to the recipient body was negligible. Intact nerve connections between the head and body of the recipient were demonstrated by the normal respiration of this animal. Artificial respiration was not used.

Results

The data presented are from two types of experiments. In one, renin was injected into the donor-isolated head circuit, while in the other

a somewhat delayed fall in the arterial pressure of the body of the recipient and an elevation in the pressure of the isolated head of the recipient.

At the right of the upper tracing are recorded

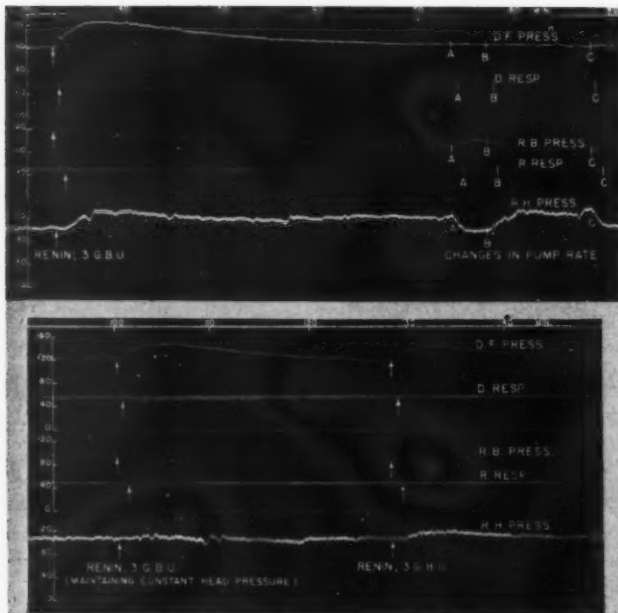


Fig. 3. Action of renin on the central neurogenic control of blood pressure. Note that changes in recipient body blood pressure (R. B. Press.) occur only as mirror images of changes in recipient head pressure (R. H. Press.). The changes in recipient body blood pressure are of the same magnitude regardless of whether the change in recipient head pressure is due to the action of renin or due to a change in pump rate. Renin has no direct action on the central neurogenic control of blood pressure.

the pressor substance was obtained from the anoxic kidney of the donor by the release of clamps which had occluded the blood supply through the renal pedicles for five to six hours.¹⁶ In each type of procedure the blood pressure response in the body of the recipient was observed with and without a controlled constant blood pressure in the isolated recipient head. In Figure 3 is illustrated the response of the blood pressures to the administration of renin into the donor-isolated head circuit. It consists of a kymograph record in two sections, the lower one a continuation of the upper. As labelled at the right, from above down, the three blood pressure tracings record, (1) femoral pressure of the donor, (2) blood pressure in the body of the recipient, and (3) pressure in the isolated head of the recipient. On the left the arrows indicate the time of administration of renin into the donor-isolated head circuit. Observing the blood pressure responses from above down, there was an immediate rise in the femoral pressure of the donor,

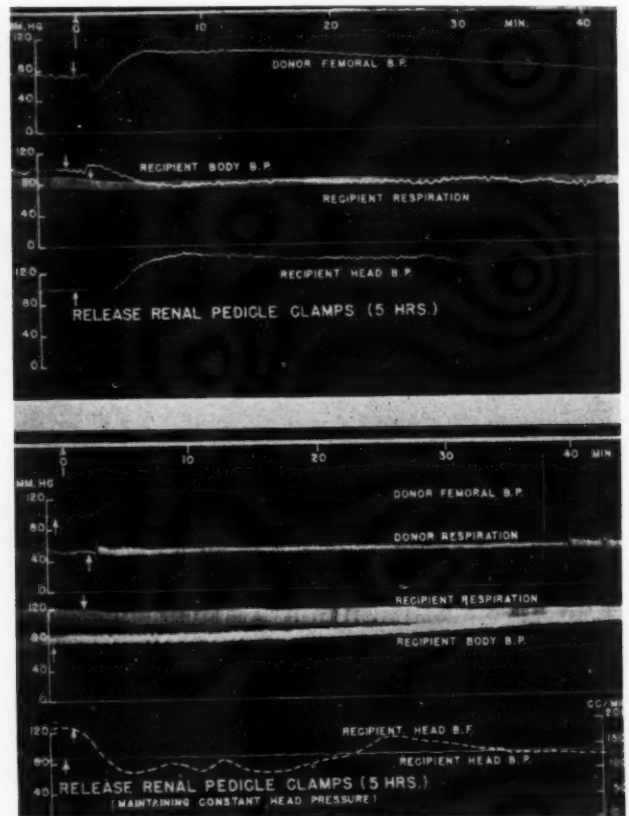


Fig. 4. The effects of renal pressor substances produced during a five-hour period of occlusion of the renal pedicle of the donor. The upper record shows the changes in recipient body blood pressure when the head pressure is permitted to rise in the presence of these substances. In the experiment recorded in the lower tracings the blood pressure of the head of the recipient was maintained at a constant level when the pressor substances were delivered to it from the kidneys of the donor. Under these circumstances the presence of these substances in the brain of the recipient failed to alter the blood pressure of the body of this animal.

blood pressure changes which occurred when the arterial blood pressure of the isolated recipient head was elevated mechanically by increasing the volume flow of blood through this isolated structure. This was accomplished by increasing the rate of the pump. Here again this elevation of blood pressure in the isolated head caused a fall in the blood pressure of the body of the recipient similar to that seen with the administration of renin as described above. This would indicate that the fall in blood pressure in the body of the recipient animal was the result of the changes in the arterial pressure in the head of the recipient.

In all probability this depressor response was a manifestation of the buffering action of the baroreceptors of the head, namely, the carotid sinuses. The lower record in Figure 3 illustrates a further check on the cause of the depressor response of the recipient body. Renin was introduced into the donor-isolated head circuit and the blood pressure of the isolated head of the recipient was maintained constant by decreasing the pump rate. Under these circumstances the blood pressure of the body of the recipient did not fall. Therefore, in the absence of a pressure change in the isolated head, renin failed to produce changes in the central nervous system which would alter the blood pressure of the body of the recipient.

The blood pressure changes which occurred when the donor animal was made hypertensive by the release of the renal pedicle clamps, are shown in Figure 4. With the release of the clamps, substances which had accumulated in the kidneys were poured out into the general circulation to cause a transient hypertension of approximately thirty minutes duration. The tracings in Figure 4 were obtained from two different experiments. In the upper record there is seen a rise in arterial pressure of both the donor and of the isolated head when the renal pedicle clamps were removed. There was a fall in the arterial blood pressure of the recipient body. In the experiment recorded below, the conditions were the same except that the arterial blood pressure of the isolated head was held constant following the release of the renal pedicle clamps. The dotted line indicates the volume of blood pumped through the isolated head. The decrease in blood flow following the release of the pedicle clamps demonstrates the increase in vascular resistance in the head caused by renal pressor substances. As in the renin experiments, the depressor response of the arterial blood pressure in the body of the recipient was eliminated by maintaining a constant pressure in the head even though renal pressor substances were demonstrated to be present in this area by increase in vascular resistance. From the above data it was concluded that the renal pressor substances do not act directly on the central nervous system to alter its control of arterial blood pressure.

Discussion and Conclusions

With the introduction of renal pressor substances into the vascular system of the isolated head of the

recipient there occurs a rise in pressure in that circulatory system. That this rise of blood pressure is due to an increase in the peripheral resistance of this isolated vascular circuit is demonstrated by the fact that the rise in pressure occurs here while a constant volume flow of blood is maintained to the head. An associated fall in recipient body pressure occurs only when the pressure in the head is permitted to increase. If the head pressure is held constant, no fall in recipient body pressure occurs. Furthermore, when head pressure is increased in the absence of renin in the circuit, the recipient body pressure still falls. This demonstrates conclusively that the depressor response observed in the body of the recipient is on the basis of pressure changes in the isolated head and is not due to the action of a renal pressor substance on the isolated head. The renal pressor substances do not have a direct action on the neurogenic control of blood pressure. It can be concluded, therefore, that these substances do not act on the central nervous system to initiate the neurogenic pressor activity which may play some part in maintaining the elevated blood pressure in chronic experimental renal hypertension and in human essential hypertension.

References

1. Bing, R. J.: Hemodynamics of neurogenic hypertension. *J. Clin. Investigation*, 23:939, 1944.
2. Blatt, E., and Page, I. H.: Hypertension and constriction of the renal arteries in man. Report of a case. *Ann. Int. Med.*, 12:1690, 1939.
3. Dexter, L., and Haynes, F. W.: Relation of renin to human hypertension with particular reference to eclampsia, preeclampsia and acute glomerulonephritis. *Proc. Soc. Exp. Biol. & Med.*, 55:288, 1944.
4. Dock, W., Shidler, F., and Moy, B.: The vasomotor center essential in maintaining renal hypertension. *Am. Heart J.*, 23:513, 1942.
5. Farris, E. J., Yeokel, E. H. and Medoff, H. S.: Development of hypertension in emotional gray Norway rats after air blasting. *Am. J. Physiol.*, 144:331, 1945.
6. Goldblatt, H., Lynch, J., Hanzal, R. F., and Summerville, W. W.: Studies on experimental hypertension: I. Production of persistent elevation of systolic blood pressure by means of renal ischemia. *J. Exper. Med.*, 59:347, 1934.
7. Gressel, G. C., Shobe, F. O., Saslow, G., DuBois, P. H., and Schroeder, H. A.: Personality factors in arterial hypertension. *J.A.M.A.*, 140:265, 1949.
8. Hoff, E. L., Kell, J. F., Hastings, N., Sholes, D. M., and Gray, E. H.: Vasomotor, cellular and functional changes produced in the kidney by brain stimulation. *J. Neurophysiol.*, 14:317, 1951.
9. Kubicek, W., and Visscher, M. B.: Hypertension. (Discussion) P. 158. Minneapolis: Univ. of Minn. Press, 1951.

(Continued on Page 1439)

Operation for Coarctation of Aorta in Older Patients

By F. D. Dodrill, M.D.
Detroit, Michigan

COARCTATION of the aorta is a congenital malformation wherein the aorta is either partially or totally constricted. The constricted area may be one of two types. In the first type, known as the infantile type, the constriction is in the proximal portion of the aortic arch. In the second type, known as the adult type, the constriction is in the region of the ligamentum arteriosum. It is this latter type that is amenable to surgical resection. The constriction leads to extensive collateral circulation between the proximal branches of the aorta and the intercostal arteries distal to the constricted area. It is because of this extensive collateral circulation that it is possible to apply clamps to the aorta proximal to, and distal to, the constriction, to resect the constricted area and anastomose the two ends of the aorta, thereby re-establishing the continuity and the calibre of the aortic lumen throughout.

The constriction produces hypertension in the upper portion of the body and hypotension or absence of blood pressure readings in the lower extremities. The effects of the hypertension in the upper portion of the body leads to deleterious effects upon the heart and vascular system. Because of the enlargement and pulsation of the intercostal arteries, notching of the ribs is seen on the thoracic roentgenogram. Cerebral vascular accidents and complications in the collateral circulation as well as cardiac hypertrophy are eventually seen in untreated patients.

The procedure was first carried out by Crafoord² of Sweden and independently by Gross.³ During the early phases of the development of this surgical procedure, it was thought that the operation should not be carried out in older patients, say beyond twenty-five years, because in such malformations there is apt to be degenerative diseases of the aorta develop at an early age. Such degenerative disease of the aorta would make the suturing of the ends a precarious procedure. However, as time has gone on, surgeons throughout the country are operating on older patients usually with good results.

In 1949, Blalock¹ reported a successful operation on a man aged forty.

The purpose of this paper is to show that the operative procedure is a practical one in selected older patients. Patients who have reasonably good hearts and who do not show too far advanced degenerative changes of the vascular system may undergo the operative procedure with good results. Nearly always in the older patient, one will observe degenerative changes in the intercostal arteries but the disease may not be equally present in the aorta itself. Three patients have been operated upon successfully by me whose ages are thirty, forty and forty-two, respectively. This report does not include younger patients in my series.

Case Reports

Case 1.—This colored man, aged thirty, had been having headaches for many years. He had been known to have had hypertension in his upper extremities for many years. Physical examination showed a young appearing adult, colored male, with a blood pressure of 210/90 in his upper extremities. There were no palpable pulses in his lower extremities. No blood pressure reading could be obtained in his lower extremities. Easily palpable intercostal arteries were present in the upper intercostal spaces. The heart was normal in size by percussion. It was regular in rhythm and no thrills were present. A systolic murmur could be heard over the upper precordium as well as posteriorly. A roentgenogram of the thorax showed a normal sized heart and no calcification could be seen in the aorta. The electrocardiogram showed left ventricular strain. There were no significant changes in the eye grounds. Kidney function tests were performed and were within normal limits.

The operative approach was through a left posterolateral incision. Huge collateral arteries were present in the chest wall. The fifth rib was resected throughout most of its course and the general pleural cavity was entered. The constricted aorta was present about a centimeter distal to the left subclavian artery. Three pairs of intercostal arteries were ligated and divided thereby freeing up the entire circumference of the aorta at this point. The intercostal arteries were not grossly diseased. Clamps were applied above and below the constriction and a two centimeter length of the aorta was resected (Fig. 1). The ends were approximated and sutured with fine silk, using a continuous everting mattress suture. The clamps were slowly removed over a period of about five minutes. There was a great fall in blood pressure from 210 systolic to 130 systolic. The heart remained regular throughout. The chest wall incision was closed in the usual manner. At the conclusion of the operation, there were good palpable pulses in his dorsalis pedis arteries. Blood pressure in the lower extremities was equal to that in the upper extremities.

The patient made a rapid recovery and was discharged twelve days following the operation. He returned to

COARCTATION OF AORTA—DODRILL

work six weeks following the operation and the blood pressure has remained approximately 130/80 in the upper extremities and 140/80 in the lower extremities. The systolic murmur is no longer present. He no longer has headaches or other symptoms of hypertension.



Fig. 1. Resected portion of aorta, 2 cm. in length, showing a small lumen in the center. No atherosclerotic plaques present.

Case 2.—This forty-year-old white man had known hypertension for many years. The etiology was not known until recently. The blood pressure in his upper extremities was 210/110. There were marked visible pulsations in the vessels of the neck. The large pulsating arteries could be seen in the inter-scapular area. There

hypertensive disease. Kidney function tests were carried out and were within normal limits.

Operation was carried out on April 26, 1950. The constricted area was found to be distal to the origin of the left subclavian artery. It was a total occlusion of the



Fig. 2. Resected coarctation in Case 2. Again no visible atherosclerotic plaques are present.

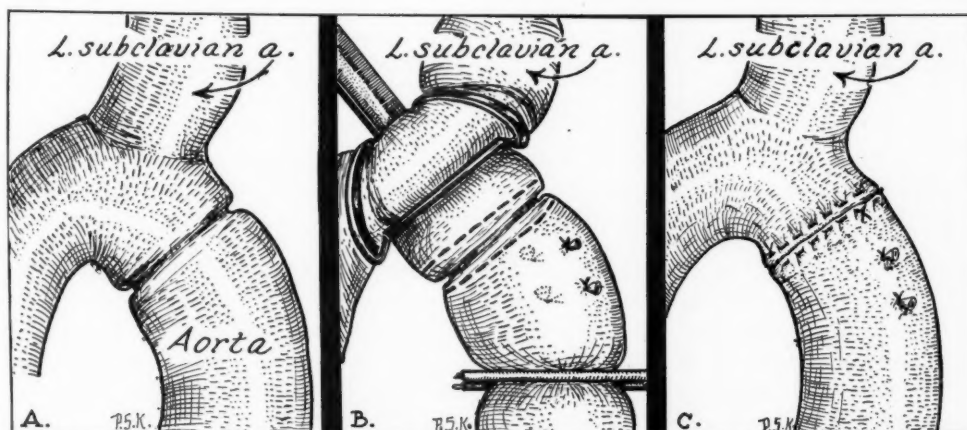


Fig. 3. A method of partially occluding the left subclavian artery when the coarctation is near it.

were no palpable pulses in his lower extremities and no blood pressure recording could be obtained in the lower extremities. The heart was not enlarged to percussion. The rhythm was regular and there was a basal systolic murmur present which was also heard posteriorly. The thoracic roentgenogram showed marked notching of the ribs. The heart was not particularly enlarged. No calcification could be seen in the aorta or other vessels. Electrocardiogram showed left ventricular strain. The examination of the eye grounds did not show the usual effects of

aorta. During the dissection of the aorta, three pairs of hugely dilated intercostal arteries were isolated and divided. Visible atherosclerosis was present in the intercostal arteries. In fact, these vessels were so friable that they had to be sutured with fine silk rather than ligated. The constricted area was resected (Fig. 2). Because the constriction was so near to the origin of the left subclavian, the anastomosis had to be carried out between the distal end of the divided aorta and the side of the hugely dilated subclavian artery. Figure 3 shows a

COARCTATION OF AORTA—DODRILL

method of partially occluding the subclavian artery when the coarctation is near it. After the constricted area was resected, the ends of the aorta were carefully inspected and the marked atherosclerosis which was present in the intercostal arteries was not visible in the aorta itself.

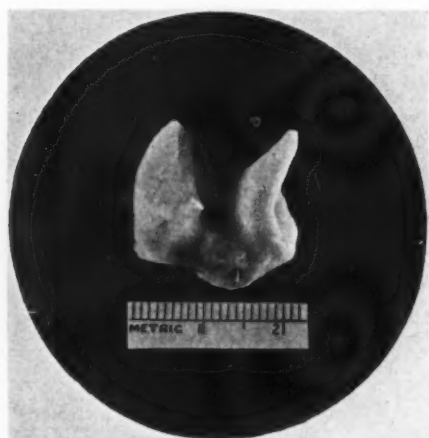


Fig. 4. Resected portion of aorta, 2 cm. in length, Case 3.

Following the slow release of the clamps on the aorta, the blood pressure dropped from 210/100 to 120/80. The chest was closed in the usual manner. The patient made an uneventful recovery and the blood pressure upon discharge was 140/80 in the upper extremities and 160/80 in the lower extremities. He continues to work as a foreman in a factory. His physician tells me that, with excitement, his blood pressure may go up to 160 to 170 systolic but is easily controlled by medical measures.

Case 3.—This white man, aged forty-two, had known coarctation of the aorta for ten years. However, because of his age, operation had not been recommended. Physical examination showed huge pulsating vessels in the neck as well as visible and palpable collateral vessels over the upper posterior thorax. The blood pressure in the upper extremities was 210/80. No pulses could be felt and no blood pressure recording could be obtained in the lower extremities. The thoracic roentgenogram showed slight left ventricular enlargement and no calcification could be demonstrated in his aorta. Electrocardiogram showed marked left ventricular strain. The eye grounds showed some tortuosity in the retinal arteries. Kidney function tests were within normal limits.

Operation was carried out on March 9, 1951. The coarctation was present just distal to the ligamentum arteriosum. The aorta was totally occluded at the constricted area. Three pairs of intercostal arteries had to be divided in order to free up the aorta. There was an aneurysmal formation present in the left intercostal artery just distal to the constricted area. This was approximately two centimeters in diameter. Because the aneurysm extended from the aortic orifice of the intercostal artery, it was necessary to suture the aortic orifice itself in order to eliminate the aneurysm. There was marked

visible atherosclerosis present in the intercostal arteries. However, after the coarctation had been resected, the aorta itself did not show gross evidence of atherosclerosis (Figs. 4 and 5). The ends were brought together and sutured in the usual manner. As the clamps were released

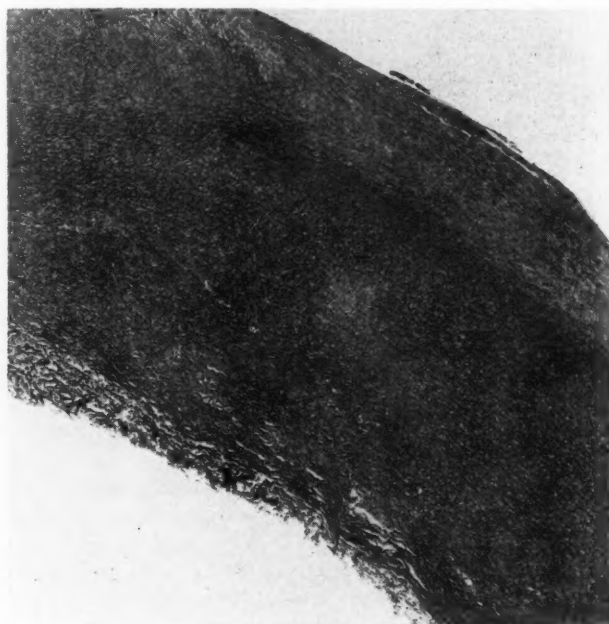


Fig. 5. Microscopic section of aorta in Case 3. No calcification is seen. There is marked fibrous thickening of the wall which is strong tissue for suturing.

from the aorta, there was a marked drop in blood pressure from 210/100 to 120/80. Following the closure of the chest wall incision, the patient developed pulmonary edema and required intratracheal aspiration. This subsided at the end of two hours. It was thought that too much blood had been given during the procedure, although there was a great amount of blood loss during the operation. The patient made a good recovery and was discharged with a blood pressure of 140-146/80 in the upper extremities and 160/80 in the lower extremities. Post-operative observation over the past six months has shown the blood pressure in the upper extremities at 150-160/80 with a slightly higher pressure in the lower extremities. The marked pulsations which were visible in the neck are no longer present.

Discussion

It has long been known that coarctation of the aorta is prone to produce atherosclerosis at a comparatively early age. The late complications of the disease are often due to accidents in the collateral circulation, although the aorta itself may rupture from the excessive pressure. The pathological findings in the two older patients presented would bear out the fact that the degenerative disease is much

(Continued on Page 1437)

Know Yourself

By Alfred P. Haake, Ph.D.

Political Economist

Park Ridge, Illinois

IN DISCUSSING a Formula for Freedom, the first step is certainly to **KNOW YOURSELF**; but I think even behind that we should have clearly in mind exactly what we mean by "freedom."

If you don't mind, I want to go back to the very basis of things, which is that for some reason or other, in His own way, the Creator placed men on earth. It does not require a theologian, a philosopher or a businessman to explain that. Science, ministry, philosophy—all of them must agree that upon occasion a man was placed on earth, and that that man was given certain injunctions. How he was given them is pretty much beside the point.

But when the process was over, there was the man, endowed with the right to choose, made responsible for the consequences of the choices that he made, having to rely upon himself and his own activities—endowed with a stewardship for himself, for the material and the forces at his disposal, and given the injunction to earn his bread by the sweat of his brow.

So, man begins by being responsible not to any individual—not to any government—but to God Almighty Himself for what we call freedom. It is a right inherent within the individual himself, and with that right goes the corresponding responsibility for the consequences of the choices that the individual makes.

I think it is very important to have clearly in mind that freedom is not merely *laissez faire* or absence of restraint, that the man who is free can do anything he pleases. That is not true. Freedom is a question of control. Energy, regardless of where it is, must be controlled. If it is uncontrolled, it becomes destructive—and that is just as true of the human body and the human mind as it is of an atomic bomb or any other kind of energy.

So, it is not a question of whether a man shall be unrestrained in one way or other—it is a question, rather, of how that individual shall be con-

trolled, and who shall control him. A man is free if he controls himself. He is not free if he is controlled from the outside or by government.

I think it is exceedingly important that we never for one moment forget that. The whole basis of this business is the sacredness of the individual personality and the responsibility of that personality directly to God himself for the way in which he uses that which is his—his body, his mind, his soul, the earth, with its materials and forces, in which he lives.

So, it is a question of self-control. If the man controls himself, he is free; if he does not control himself, he is not free.

How shall he control himself? Manifestly, this whole process is going to result (if it is successful) in the development of the individual; and if the individual develops as he should develop, it is because he uses his powers and his opportunities effectively. You can lay it down as a rule, as I need not put it to you gentlemen, that the powers which he does not use, he loses. That is the injunction: Use that which is yours, or you lose it through loss of use.

How shall he control himself? The process begins logically with the individual knowing himself. That, in itself, is a terrific responsibility. It becomes my duty and my responsibility to understand this body of mine. Whether I understand it as well as a doctor, or not, may not be so important.

There are many things about my body which I am not going to understand quite as well as a doctor will understand them. I am frankly not too much concerned about knowing all about the duodenum, or what happens when a bone button gets into it—if a bone button could get into it. I don't happen to know even that; but I do need to know what kind of a body I have. I do need to know what my possibilities are with that body: Am I powerful? Am I well endowed with muscles? Am I well endowed with a bone structure? Are there any weaknesses in this body of mine that have to be watched and overcome? We overcome other difficulties.

I remember, many years ago, that I was unable to talk. I had to overcome the difficulty that was involved in getting my tongue twisted around my teeth and not getting well formed words past my lips. If I hadn't known that difficulty, and if I hadn't found some way of overcoming it, I cer-

Address delivered at the Formula for Freedom presentation before the House of Delegates, Michigan State Medical Society, Grand Rapids, September 24, 1951.

tainly could not be standing here. There are other weaknesses of which I have not been aware during the years, which, if I had been aware of them, might have been overcome and corrected.

Put it as you will, the first step of that individual, as soon as he can do it with what help he can get at home and from others who know, is to know himself—to know his body, to take an inventory of himself.

His next step is to begin strengthening those possibilities through which he can make himself most useful; to overcome the weaknesses and the handicaps which would stand in the way of his executing or performing the stewardship that is vested in him; and thirdly, he has got to learn how to live with other folks. That grows out of knowing himself likewise, because unless he knows himself as well as knowing other people, certainly the next step, which is not a part of my talk, could never be accomplished.

Knowing himself—knowing the laws by which he must live—he is ready for the next step, because the individual alone can neither make nor keep himself free. Let me repeat at this point that freedom comes from God as a right to choose; but it isn't automatically a right that is in us. If it has any value, or if it has any significance, it is as the individual uses it. If he fails to use it, then, of course, he loses it.

It isn't enough merely to know himself and his capacity and his weaknesses and strong points, and make himself into the most able individual of which he is capable, but he must learn to adjust himself with other individuals, because a community must grow in order that freedom can be sustained.

I cannot enforce my freedom against you all by myself, neither can you enforce your freedom against me all by yourself. Consequently, we must have a community with laws and rules, which is the third important factor that will be discussed, as it should be. I am merely mentioning it.

The community must be developed as a means through which individuals can be helped to live with each other. It is only as each individual in that community makes himself fit for freedom—only as each individual in that community, on his own initiative, knowing himself as he is, directing himself, improving himself, develops himself so that he is capable of living with other people, that

subsequently we can have a community which is fit for freedom.

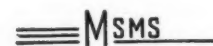
Only as we develop communities which are fit for freedom can we eventually develop a nation which is fit for freedom. Let me illustrate this last point, because it is of some consequence:

In our own little town of Park Ridge, Illinois, we are very ardent believers in freedom. We are very ardent believers in what is known as "the American system of private enterprise." Eighty-five per cent of our people are business executives or professional people. We have no poor people in our community, and we have no rich people. It is a fine middle-class neighborhood or community of some 17,000 people, as fine a guinea pig as you could ask for with which to make experiments.

And yet, believing as ardently as we do in the thing that we know as private enterprise and individual freedom, in our own community we stretched out one hand like this, asking for a gift from the government, while at the same time we held out the other hand in horror at the idea of government taking over our responsibilities. That is where we are licked.

The answer to these things, gentlemen, is not in Washington ultimately. That is tremendously important. It is not ultimately in the State Capitol. Ultimately, it has got to begin with the individual. The individual himself must be willing to live a life of responsibility. He must be able to refrain from accepting those things which undermine his own stewardship—his own sense of responsibility.

Only when the individual, knowing himself, makes himself fit for freedom, can the rest of the process go on with the ultimate goal of a free nation.



WHAT HAS HAPPENED IN TEN YEARS?

- Over 13,000,000 people have died.
- Over 17,000,000 marriages have taken place.
- Over 30,000,000 babies have been born.
- Over one-third of all present families in the U. S. have been formed.
- Out of 150-odd million people in the U. S. today, 63 per cent do not remember World War I.
- Fifty-two per cent do not remember a Republican administration in the White House.
- Forty-eight per cent do not remember what conditions were like before World War II.

Editorial

THE SIXTY-FIVE-RETIRED PERSON PROBLEM

AT TIMES we have invited the problem of the prematurely retired person, aged sixty-five and over, to the attention of our members. In the early years when some of us were very much younger, the person over fifty was considered old. He retired from the active management of his business or farm in favor of his son. He could not see. He was more or less an invalid.

At the beginning of this century, only a small proportion of our population reached the age of sixty-five. We have improved our health, our living standards, and have decreased our morbidity and mortality by such degrees that now there are more than seven million people over sixty-five in the United States. And the average age at death now is approximately seventy. In a very few years over half our population will be over sixty-five.

Labor, through its collective bargaining, and a desire to assure jobs for the younger incoming generation which demands its chance, has established age sixty-five as a time for compulsory retirement. Industry has acquiesced. Government has furthered the program by many indications (old age security, income tax allowances, et cetera), and we are now witnessing the younger man assuming the responsibility of furnishing livelihood for the forcibly retired, perfectly healthy and competent man of sixty-five.

This problem, from a different angle, has attracted the attention of adult education leaders. In October, 1951, in Los Angeles, the first annual meeting of the Adult Education Association of the United States of America, Inc., had 567 delegates, fourteen from Michigan. Dr. Howard McClusky, Director of Community Education of the University of Michigan, was made the first President.

Among the new trends in adult education is training for the aging. This is an entirely new concept of *training* for the later years—not preparing for retirement but guiding to changing occupations more suitable to older people and aside from the occupations likely to interfere with younger people.

Educators, combining study forces with business

and industrial leaders, have found that mandatory retirement is a dead loss to the country; their surveys show that those past the customary employment age of sixty-five can perform tasks which strengthen the nation both in peacetime and in time of national emergency.

This is important, for it may well be that a significant part of the reorientation of this large proportion of people will come from the teaching of the problems of temporary and permanent disability in our colleges and our medical schools. Medicine has accepted the treatment of the aging as a new specialty, Geriatrics, and is devoting much study and attention to the problem. Joining forces with another group of special interest serves to accentuate the duties and obligations essential to the well-being of an increasing number of our people. They deserve our care and solicitude. They are about to become a severe economic, sociologic and medical problem.

MEDICAL EDUCATION

VARIOUS ESTIMATES have been made of the costs of medical education, and the fact is freely admitted that the tuition and charges paid by the students come very far from meeting the monetary needs. All medical schools must have some other sources of financing. Endowments in the past have been a reasonable source of income. The present era of high government spending and borrowing, with the consequent low interest returns from trusts that formerly supplied much of the funds has completely changed the picture.

Many medical colleges are state owned, and as part of state universities or other locally sponsored schools receive their main support from local or state governments. This is logical. These schools have the obligation of supplying new doctors to replace those lost by death or retirement, and thus provide for the medical care of the people. The fast increasing costs and broadened scope of medical education have exhausted these sources, or at least sadly depleted them.

In the immediate past, the Federal Government has suggested taking over and supporting the med-

ical schools. Bills have been introduced into Congress to supply many millions of dollars for that purpose, as well as to establish new schools and produce doctors on a grand scale.

Experiences in other fields where the Federal Government has taken over a service or function have been unhappy. The Federal Government does a poor job (witness the Post Office service, the treatment of the American Indian, and others). There is also a Supreme Court decision that the Government may control what it subsidizes. How many of us want Oscar R. Ewing running the medical schools of this country? That is exactly what would happen.

The American Medical Association this year proposes that the profession finance its own medical schools and has made a half million-dollar donation. It has called upon its members to subscribe to this fund. It is suggested that if each doctor would contribute fifty dollars a year that would raise the estimated one million dollars needed annually. Some, of course, cannot pay fifty dollars, but there are enough others in sufficient numbers who could pay for more than one share, and thus meet the goal. Are you to be counted in?

STATE HOSPITAL ADMINISTRATION

STATE HOSPITAL superintendents are morally and legally responsible for living within their budget appropriations. The bill which provides the money to run their hospitals also makes it a *crime* for them to exceed their appropriations. At the same time, they are morally and legally responsible for the proper care of their patients.

If their budget appropriations are sufficient, there is no problem. But when the appropriation is insufficient, as it usually is, they find themselves impaled on the horns of a dilemma.

Fortunately, because of the caliber of the men in these positions the dilemma has usually been resolved in favor of the patients. Also fortunately, because of the caliber of the men in our Legislature the resulting deficits have been treated realistically not as crimes, but as necessary expenditures, and have been met by appropriations to cover the deficits.

However, this is a basically unsound if not dangerous method of operation, especially when the insufficiency of the appropriation is known at the time it is passed.

An item in point is the allowance for food for

patients in our state mental hospitals. A minimally "adequate" food budget for such patients at budget time in May, 1951, cost 47 cents per patient per day. About 4 cents of this was supplied from government surplus commodities. This left 43 cents to be provided from state funds. But the Legislature actually appropriated 37 cents. (The cost today is 49 cents.)

The answer is obvious. The Legislature has too little money (state income) to spread over too many demands (state expenditures). It is the line of least resistance to try to fill the gap by cutting the "soft" items such as food. At least the figures balance on paper.

If the care of patients in our mental hospitals is a medical problem then this merits the active participation and interest of our State Medical Society through its Council, its mental hygiene and legislative committees at budget appropriation time. But even more can be done by individual physicians through contacts with their local representatives in the Legislature. Considering the nature of the problem it should not take more than a few words to alert each member of the Legislature to the need for appropriations sufficient to meet the basic food requirements of the patients in our state mental hospitals.

MENTAL HYGIENE COMMITTEE

FIFTY YEARS OF ACCOMPLISHMENT

WITH THIS number, we complete the fiftieth year of publication of THE JOURNAL of the Michigan State Medical Society. During the summer meeting of the Michigan State Medical Society in 1902, a complete reorganization of the Society was effected, making it a representative organization. This supplanted the previous organization with a small general membership, and having no continuity other than the annual meeting and the publication of its Transactions each year.

The new officers established a monthly medical journal to replace the yearly Transactions, thus establishing a continuity of purpose and a monthly contact among the membership. The first issue of THE JOURNAL appeared in September, 1902. The Michigan JOURNAL was the second State Society-owned medical journal. The present editor was a student in the office of the first editor, Andrew P. Biddle, M.D., and during Doctor Biddle's illness he published the December, 1905, JOURNAL, which was the fiftieth issue in THE JOURNAL's history.

JMSMS

EDITORIAL

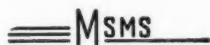
Benjamin R. Schenck, of Detroit, was editor for the next four years, and Dr. Wilfrid Haughey succeeded him, beginning with the March, 1910, JOURNAL.

The one hundredth number was published in December, 1910, and in celebration THE JOURNAL splurged by publishing the pictures of all the past Presidents it was possible to assemble, thirty-one in all, with twelve missing. This present December, 1951, issue of THE JOURNAL, is Number 592. During all that time, we have seen the Society grow from less than 700 to 2100 in 1910, and now we have passed the 5,000 mark by two hundred.

Michigan has always been very active in proposing or adopting new ideas in the practice of medicine, or the economic or sociologic aspects of medical affairs, and has established many "Michigan Firsts," a listing of which we promise during the coming year. One of the most important is the program upon which we are now working and which was inaugurated at the September Annual Session of the House of Delegates—the "Formula for Freedom."

What the second fifty years of growth will accomplish no one can prognosticate. However, we have known this society for most of the passing half century, and judging from past history the Michigan State Medical Society will be well in the front in every advantageous endeavor bearing upon the medical, or socio-economic problems which cannot help but arise. During the immediate past, the Society has established Michigan Medical Service as its solution to the problems of our patients who needed to budget their health care. At the same time we (the doctors of medicine of Michigan) promulgated our solution to the extremely urgent demand for the socialization of the nation, medicine being the first target. Blue Shield is our creature, our shield against government medicine, and our assurance of good care to our patients. Its success is assured if used and administered with honesty and integrity by ourselves as well as the accredited officials.

We look to the future with confidence.



The Treasury itself estimates that if the government actually confiscated all the income not now taxed from all those above the \$10,000 bracket, the total revenue would not exceed 3½ billion, which is pitifully shy of the amount they aim to get. But below the \$10,000 bracket is \$68 billion nontaxed.

DECEMBER, 1951

FUTURE DATES

The annual sessions of the Michigan State Medical Society are scheduled seven years in advance, as follows:

1952	Detroit	September 24-26
1953	Grand Rapids	September 23-25
1954	Detroit	Sept. 29-Oct. 1
1955	Grand Rapids	September 21-23
1956	Detroit	Week of Sept. 24
1957	Grand Rapids	September 20-22
1958	Detroit	Week of Sept. 22

The Michigan Clinical Institute is scheduled for Detroit six years in advance, as follows:

1952	Detroit	March 12-14
1953	Detroit	March 11-13
1954	Detroit	March 10-12
1955	Detroit	March 9-11
1956	Detroit	March 8-10
1957	Detroit	March 13-15

ON THE RUN . . .

In shock without respiratory difficulty the anoxia is overcome more promptly by blood and blood substitutes than by oxygen.

Sugar is the most unbalanced of all the commonly used foods.

Vitamin B₁₂ in weekly doses of at least 40 micrograms is as effective as liver extract in subacute combined degeneration of the spinal cord.

Alcohol is not as effective as nitroglycerin in angina because it produces a sedative and psychogenic action rather than relief of myocardial ischemia.

Carcinoma of the body or tail of the pancreas metastasizes more readily and extensively than when it involves only the head of the pancreas.

There are fewer adult than child stutterers because the former have adjusted to the difficulty.

Mediastinal emphysema should be ruled out in all cases of left-sided spontaneous pneumothorax.

A fall in blood pressure of 20 to 40 mm. of mercury usually accompanies relief of dyspnea by oxygen therapy which may be risky when hypotension exists.

Intervertebral disk rupture should be suspected if paravertebral pressure reproduces radiating pain.

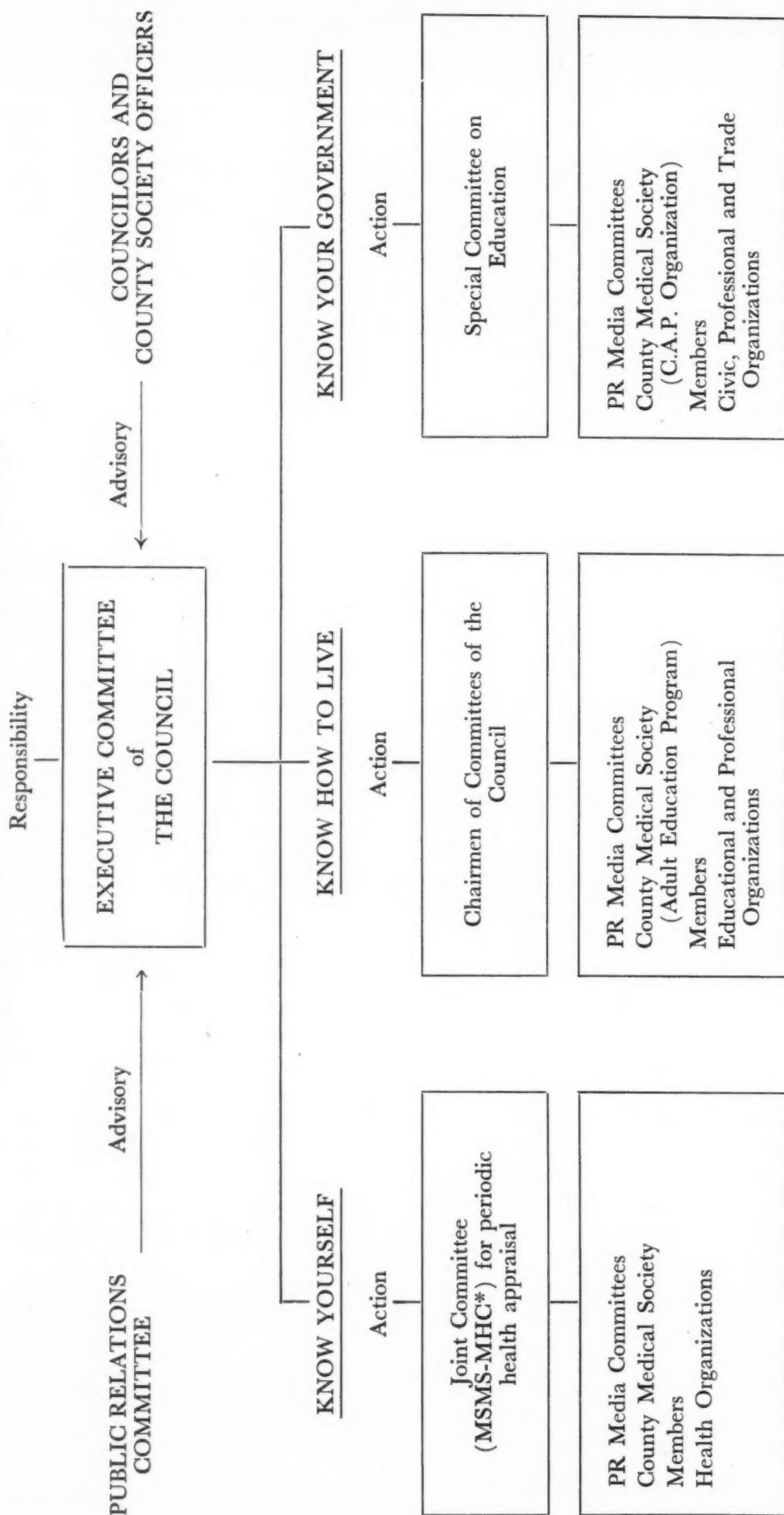
There is no specific method for handling coccidioidal infections, only symptomatic treatment and rest.

To prevent transmission of serum hepatitis, laboratory workers should avoid getting blood on the hands and should wash the hands immediately after contact with human blood or its fractions.

Structural damage to the pancreas is permanent.

—Selected by W. S. REVENO

FORMULA FOR FREEDOM



*Michigan Health Council

Preparations for 1952

To date, the program has been conceived by the Public Relations Committee, approved by The Council, presented to the House of Delegates and planned by Executive Committee of The Council. A series of articles is appearing in the JMSMS, county and district medical societies have been offered speaking talent for "Formula for Freedom" nights, a "Formula for Freedom" kit is being prepared, public relations media committees are meeting, and presentations are being made to other state organizations and to the American Medical Association.

FORMULA FOR FREEDOM

A Formula That Works for All

(Part I)

Michigan medicine has long sought:

1. A means of girding all its forces under a single banner in order to have maximum public relations impact.
2. A workable common denominator for liaison with other organizations whether they are Health, Educational, Civic, Professional or Trade, in character.
3. A symbol that would obviously dedicate the service activities of the medical profession toward helping the individual help himself.

Michigan medicine has found these means, that denominator, the symbol—

The Formula for Freedom

Know Yourself

Know How to Live

Know Your Government

It is not a preachment: it's a practice.

The Formula applies to you and your organization: it applies to your neighbor and his organization.

Know Yourself

Freedom is defined as a "state of being independent, of ease in performance, a *particular privilege*." Anything, be it an insidious weakness or an overbearing strength that substracts from independence, inhibits ease of performance or reduces the privilege, removes a certain degree of freedom. Ill health, inadequate social and religious life, financial trouble and legal difficulties all remove a degree of freedom. This is obvious: it is evidenced every day of our lives through both personal experience and observation. Consequently, since we believe in the responsibility of the individual for his own welfare, it is vital that each individual know himself in order that he may take the most effective action within his ability to protect himself against those things which would remove his freedom.

That is what the "Know Yourself" element of the Formula for Freedom proposes to help the individual to do.

Here is how it is proposed that this be accomplished.

MSMS Action

The Michigan State Medical Society has appointed a joint committee with the Michigan Health Council—the Joint Committee (MSMS-MHC) to study the Periodic Health Appraisal.

This Committee is responsible under the Executive Committee of The Council for the direction of work under the Know Yourself element. Its first activity will be to develop the form and concept of a Periodic Health Appraisal. Their work will continue toward the end of making this concept common knowledge among the doctors of medicine in Michigan. The Committee will then co-operate in making the form of the Periodic Health Appraisal available to large numbers of persons in Michigan.

It is proposed that the concept be given to the MSMS membership through articles in the JMSMS and other medical Journals. In addition, a special pamphlet or a 16 mm motion picture may be used to disseminate this information.

The form for the Periodic Health Appraisal will be one page in length and will be accompanied by three other pages each of which will be devoted to one of three other appraisals—Personal Social-Religious Appraisal, Personal Economic Appraisal and Personal

(Turn to next Page)

Formula For Freedom

(Continued)

Legal Appraisal. These pages will be prepared in collaboration with other representative professional organizations.

The four pages will constitute a check list for the individual to complete. Upon their completion, it should give the individual a reasonably accurate accounting of himself in these four basic fields of living.

It is planned that the four-page leaflet will be made available to the general public through their doctors, lawyers, bankers, pastors, insurance men, service clubs, unions, etc. It is to be kept by the individual and referred to periodically in order that he may better *know himself*.

In addition to the work described above it is the intent of the plan that the Joint Committee (MSMS-MHC) to Study the Periodic Health Appraisal will also head an effort to emphasize the importance of the health of the complete individual rather than any single portion or disease.

It hopes to gain the support of the various health organizations (Heart, Cancer, T.B., etc.) in this movement so that whereas the health organizations do not de-emphasize their own program of detection or education, they acknowledge the greater importance of the complete health picture rather than any segment thereof.

All scientific committees of the MSMS will be asked to contribute either directly or through their individual members to the development of this valuable program.

Each county medical society will be asked to acquaint its members with the program.

Each member of the MSMS will be asked to co-operate in the information and promotion of the "Know Yourself" element.

Every step that will emphasize the individual's responsibility for himself will be one step away from socialism.

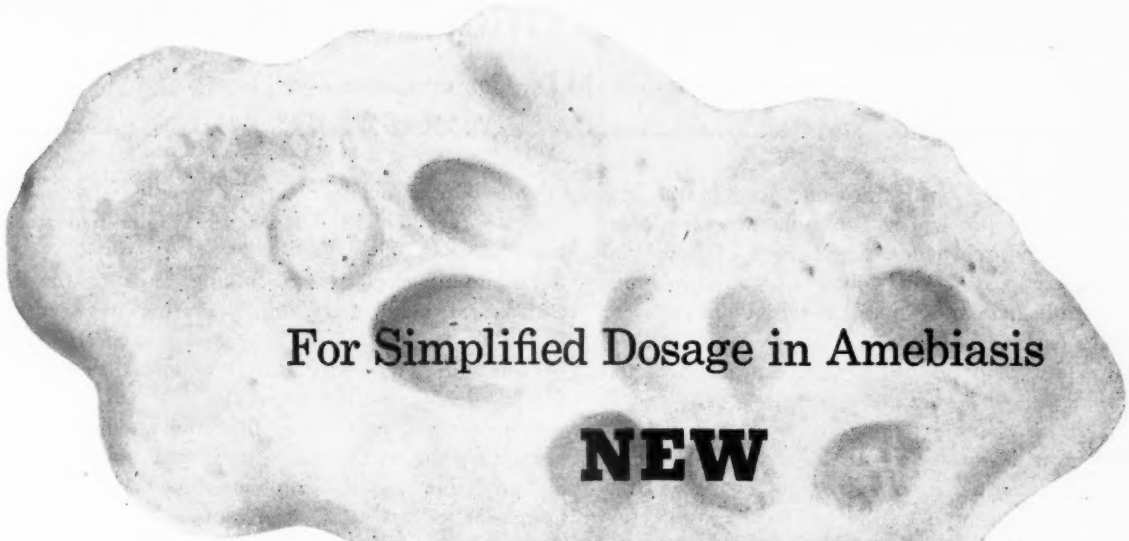
(See page 1427 for the article, "Know Yourself," by Dr. Alfred P. Haake. An article on the second element of the Formula for Freedom—"Know How to Live" will appear in the January issue.)

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL

The Department of Postgraduate Medicine
Brief Review Courses for Practicing Physicians
1952

Anatomy.....	(Thursdays).....	Feb. 14-May 29
Internal Medicine		
Clinical Internal Medicine.....	(Thursdays).....	Jan. 10-April 17
Diseases of the Heart.....		March 17-21
Rheumatic Diseases.....		March 24-28
Metabolism and Endocrinology.....		March 31-April 4
Diseases of Blood and Blood-Forming Organs.....		April 7-11
Diseases of Gastro-Intestinal Tract.....		April 14-18
Recent Advances in Therapeutics.....		April 28-30
Allergy.....		May 5-9
Electrocardiographic Diagnosis.....		August 25-30
Neurology, Clinical.....		May 5-7
Obstetrics & Gynecology.....	Obstetrics.....	Jan. 9-12
	Gynecology	Feb. 6-9
Ophthalmology.....		April 21-23
Roentgenology, Diagnostic.....		April 7-11
Summer Session.....		June 23-August 2

Further information and application blanks may be obtained from Dr. H. H. Cummings, Chairman, Department of Postgraduate Medicine, University Hospital, Ann Arbor, Michigan.



For Simplified Dosage in Amebiasis

NEW

Diodoquin Tablets of

10 GRAINS

(650 mg.)



With the introduction of a new 10-grain (650 mg.) tablet of Diodoquin, the number of tablets necessary for treatment of amebiasis can be reduced from ten a day to three a day.

Thus the twenty-day recommended dosage schedule is accomplished with a total of 60 instead of 200 tablets. The cost to the patient is reduced accordingly.



A potent oral amebicide—

DIODOQUIN[®]
(diiodohydroxyquinoline)

—is a well-tolerated, relatively nontoxic compound containing 63.9 per cent of iodine.

Now available in tablets of:

3.2 grains (210 mg.), bottles of 100 and 1,000

10 grains (650 mg.), bottles of 60 and 500

Be sure to prescribe the 10 gr. (650 mg.) size for full adult dosage.

SEARLE RESEARCH IN THE SERVICE OF MEDICINE

Michigan's Department of Health

Albert E. Heustis, M.D., Commissioner

A mass-scale survey of health conditions in all new industrial plants in the Upper Peninsula has been completed by a survey group from the Division of Industrial Health. The group also made follow-up studies in other Upper Peninsula industries in which initial surveys were made a year earlier.

Silicosis is the major industrial health problem in the Upper Peninsula, with welding fumes in second place, the survey shows.

Compliance with recommendations for improvements in the Upper Peninsula industries is good—better than in major industrial centers in the Lower Peninsula, follow-up revealed.

* * *

A member of the staff of the Industrial Health Division has now completed advanced study in radiation hazards in industry and in civil defense. He has received specialized training in the use, care and repair of monitoring instruments and in safe practices in the handling of radioactive materials. His services are available throughout the state.

* * *

The Michigan Department of Health has contracted with the American Red Cross to collect and ship blood to be made into dry plasma for use for national defense. The first shipment was made early in November.

* * *

A. B. Mitchell, M.D., has resigned as director of the Shiawassee County Health Department to become director of the Allegan and Van Buren County Health Department.

* * *

Baby's Day Cards dealing with the care of the baby and his development from a physical, mental and social standpoint for six periods from birth through six years of age have been prepared by the Section of Maternal and Child Health and approved by the Child Welfare Committee of the Michigan State Medical Society.

Physicians who wish to use the attractive new *Baby's Day Cards* can obtain them through their local health departments.

* * *

Health problems of the aging are featured in the November issue of Michigan Public Health. Diseases, accidents and nutritional difficulties are among the subjects discussed. Michigan's changing population trends are pointed out. An article from the State Department of Social Welfare tells of public assistance available for the health of the aging, and one from the Department of Mental Health tells of ways of improving the mental health in the later years. Copies of the issue may be obtained without charge from the Michigan Department of Health.

One out of every ninety-six people who had their chests x-rayed at Michigan's 1951 fairs had suspected tuberculosis.

Mobile tuberculosis case-finding units of the Michigan Department of Health, operating at twenty-three fairs this summer and fall, x-rayed the chests of 53,982 persons and found 1,124 chest abnormalities, including 560 cases of suspected tuberculosis.

Where the small x-ray film indicated a chest abnormality, the individual was advised, by mail, to see his physician for a complete study and any needed treatment.

A summary of the 1951 county fair survey follows:

County Fairs	Total number x-rayed	Number with chest abnormalities	Number with suspected tuberculosis
Alpena County Fair, Alpena.....	3,447	57	27
Arenac County Fair, Standish.....	1,118	29	11
Barry County Fair, Hastings.....	1,623	27	8
Branch County Fair, Coldwater.....	3,751	74	38
Central Michigan Fair, Big Rapids.....	1,401	35	19
Charlevoix County Fair, East Jordan.....	835	16	2
Clare County Fair, Harrison.....	859	23	9
Eaton County Fair, Charlotte.....	1,749	55	25
Emmett County Fair, Petoskey.....	1,778	38	15
Gladwin County Fair, Gladwin.....	835	24	12
Hillsdale County Fair, Hillsdale.....	2,935	69	35
Ionia Free Fair, Ionia.....	2,253	74	33
Iosco County Fair, Hale.....	294	8	3
Isabella County Fair, Mt. Pleasant.....	3,140	59	30
Jackson County Fair, Jackson.....	1,166	13	5
Lenawee County Fair, Adrian.....	3,637	78	43
Michigan State Fair, Detroit (2 units).....	11,903	214	128
Midland County Fair, Midland.....	3,186	47	22
Monroe County Fair, Monroe.....	1,900	34	22
Northern Michigan Fair, Cheboygan.....	2,010	33	18
Oceana County Fair, Hart.....	938	19	9
Osceola County Fair, Evart.....	462	4	2
St. Joseph County Fair, Centreville.....	2,762	94	44
TOTAL.....	53,982	1,124	560

* * *

Seven-year interim examinations of the teeth of Grand Rapids and Muskegon school children participating in the Fluoridation Project were completed early in November. The project, jointly conducted by the Department of Health, the University of Michigan and the Public Health Service, is showing results which are influencing hundreds of cities to plan for fluoridation of their public water supplies.

* * *

State Health Commissioner Albert E. Heustis upheld mass blood typing for civilian defense in a national radio panel planned by the American Medical Association and the National Civil Defense in connection with the national Medical Civil Defense Conference in Chicago early in November. At the Conference which included representatives of state health departments, medical societies, hospital associations and civil defense from each state, Dr. Heustis was chairman of a dis-

JMSMS

MICHIGAN'S DEPARTMENT OF HEALTH

cussion group on organizing and equipping an improvised hospital system for civil defense.

* * *

To discuss, analyze and seek out solutions for mutual problems, local health department personnel of three regions of the state met in regional conferences during November—the Southeastern District in Detroit; the Southwestern District in Kalamazoo; and the Northern District in Gaylord.

The Regional Conferences not only work out health problems of a regional nature on a regional basis but in addition integrate their programs with those of other regions and with the state health program. Staff members of the Michigan Department of Health served as consultants.

* * *

To help medical record librarians of Michigan's hospitals with their problems on the completion and registration of birth records, the Chief of the Section of Vital Records of this Department spoke at the meeting of the Michigan Chapter of the American Association of Registered Medical Librarians in Detroit, November 10.

OPERATION FOR COARCTATION OF AORTA IN OLDER PATIENTS

(Continued from Page 1426)

more marked in the collateral arteries than in the aorta itself. Because of this fact, operation in selected older patients seems to be a justifiable and desirable procedure.

Summary

1. Three patients with coarctation of the aorta in the older age group have been operated upon. Their ages were thirty, forty and forty-two years, respectively.

2. Marked visible atherosclerotic plaques were present in the collateral circulation in two of these patients; however, no plaques were seen in the aorta itself in either case.

3. One patient had an aneurysm of an intercostal artery which was resected.

4. All patients survived the operation and seem to have been markedly improved.

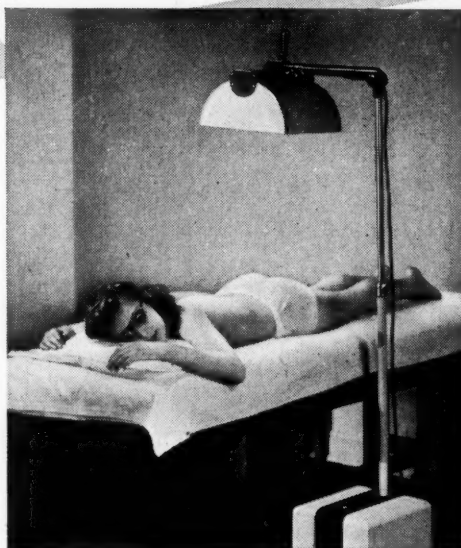
References

1. Blalock, Alfred: Discussion of paper by Gross, presented at meeting of American Heart Association, 1949.
2. Crafoord, Clarence and Nylin, G.: Congenital coarctation of the aorta and its surgical treatment. *J. Thoracic Surg.*, 4:347, 1945.
3. Gross, R. E.: Surgical correction of coarctation of aorta. *Surgery*, 18:673, 1945.

DECEMBER, 1951

Say you saw it in the *Journal of the Michigan State Medical Society*

THE *Burdick* ULTRA LUX Ultraviolet Lamp No. QA-250-N



— with its high vacuum, pure quartz tube containing mercury provides radiation rich in both the germicidal and antirachitic ultraviolet rays.

Thorough investigations have definitely established the *ancillary* therapeutic value of ultraviolet radiation in a great variety of diseases. Ultraviolet irradiation is *specific* for lupus vulgaris and for prevention of rickets by prenatal (entire body) radiation for the mother and nursing mother.

The Burdick Ultra Lux is low-priced, economical in operation and long-lived because of expert construction.

Consult your Burdick dealer or write to The Burdick Corporation, Milton, Wisconsin, for complete information.

THE BURDICK CORPORATION
MILTON, WISCONSIN

THE G. A. INGRAM COMPANY
4444 Woodward Avenue, Detroit 1, Mich.

In Memoriam

James B. Blashill, M.D., of Detroit, died at his home in Detroit, October 6, 1951, at the age of forty-seven.

Dr. Blashill was graduated from the University of Michigan Medical School in 1930, and practiced medicine in Detroit for sixteen years. He was a general surgeon, serving on the staff of the East Side Hospital. He was active in the Wayne County Medical Society.

Dr. Blashill was a veteran of the Medical Department of the Army in World War II.

He is survived by his wife, Blanche; three daughters, Joyce, Ann and Mary, a son, James, two brothers, and a sister.

* * *

Robert L. Dixon, M.D., of Caro, died September 24 in the University Hospital, Ann Arbor, at the age of seventy-four.

For the past thirty-seven years he served as superintendent of the Caro State Hospital. Dr. Dixon became medical superintendent on February 1, 1914, after resigning his post as state health commissioner. He held the position, except for the period between 1930 and 1937, until his retirement in 1949; from 1930 to 1937 he was superintendent at the Lapeer State Home and Training school.

Dr. Dixon was born May 23, 1877, in Angola, Indiana. He was graduated from Tri-State college, Angola, Indiana, and from the University of Michigan Medical School.

After receiving his medical degree in 1910 at the age of twenty-three, he taught in the University Medical School. He became state health commissioner on July 1, 1911.

He was a member of the Tuscola County Medical Society and a Life Member of the Michigan State Medical Society.

Dr. Dixon, a widely known specialist on epilepsy, served as president of the National Association for the Study of Epilepsy; he was a Fellow and a member of the Council of the American Psychiatric Association, and also a charter member of the American Epileptic League. Dr. Dixon was a diplomate of the American Board of Neurology and Psychiatry.

The many community activities of Dr. Dixon included his charter membership in the Caro Rotary club of which he was president for two years; he was an honorary member of Rotary at the time of his death. Other activities included an interest in the establishment of the Caro Community Hospital, membership on the Hospital Commission, and membership for a number of years on Indianfields Township library commission.

He was successively a director, vice president and president of the State Savings Bank, receiving the latter position last April.

Dr. Dixon is survived by his wife Mabel; a son, Robert L. Dixon, Jr., a professor in the School of Busi-

ness Administration, University of Michigan, Ann Arbor; a daughter, Mrs. Richard J. Stamberger, of Detroit; three grandchildren, and one sister, Mrs. Olive Reuter, Ft. Wayne, Indiana.

* * *

W. Bede Mitchell, M.D., of Detroit, died October 20, 1951, at the age of fifty-three.

At the time of his death, Dr. Mitchell, an obstetrician for more than a quarter of a century, was vice chief of staff in obstetrics and gynecology at Grace Hospital.

After graduating from Yankton College in South Dakota, he received his medical degree from Wayne University College of Medicine in 1925, and interned at Providence Hospital. Before going to Grace Hospital he was a resident physician at Herman Kiefer Hospital.

Dr. Mitchell was a member of Phi Rho Sigma medical fraternity and of the Michigan Society of Obstetricians and Gynecologists. He was also editor of the *Grace Hospital Bulletin*.

He was a medical officer in the South Pacific in World War II; he also served in the medical corps in World War I.

Dr. Mitchell is survived by his wife Juanita, and four sons, W. Bede, Jr., Stuart, John and William.

* * *



Henry John Pyle, M.D., Grand Rapids, died August 27, 1951, at his home in Grand Rapids at the age of sixty-nine.

For the past forty-two years Dr. Pyle served the community of Grand Rapids as a general surgeon as well as industrial surgeon for the Nash-Kelvinator Company. He opened his office in Grand Rapids in 1907 after his graduation from the Detroit College of Medicine.

Dr. Pyle was Chief of the Medical Staff of Blodgett Memorial Hospital in 1933 and 1934 and was a member of the staffs of Butterworth and St. Mary's Hospitals in Grand Rapids.

He was a past president of the Michigan Association of Industrial Physicians and Surgeons and a past president of the Kent County Medical Society. He was Speaker of the House of Delegates of the Michigan State Medical Society for six years, serving as a member of that body for ten years.

Dr. Pyle is survived by his wife, Frances; two daughters, Mrs. James M. Idema, of Grand Rapids, and Mrs. R. Lynwood Baldwin, Jr., of Durham, N. C.; three brothers, J. Nelson, of Detroit, Raymond, of Bristol, Wisconsin, and Dr. Wynand V. K. Pyle of Los Angeles; a sister, Mrs. Nellie Jekel, of Zeeland, and six grandchildren.

IN MEMORIAM

George A. Shaw, M.D., of Manistique, died October 1, 1951, at the age of fifty-six. He had served the community of Manistique for the past twenty-four years.

Dr. Shaw was graduated from Northwestern University Medical School, Chicago, in 1925. He served his internship at Harper Hospital, Detroit.

Dr. Shaw was a member of the Delta-Schoolcraft Medical Society and was a fellow of the American College of Surgeons. He was chairman of the medical staff of Schoolcraft Memorial Hospital and one of the Upper Peninsula directors of the American Cancer Society.

Besides his activity in medical circles, Dr. Shaw took part in fraternal and civic affairs of his community. He was a member of the Manistique Board of Education, a past president of the Manistique Rotary Club as well as a former District Governor of Rotary International. He was also a past director of the Manistique Chamber of Commerce.

During World War I, he served in a medical group attached to the 51st Gordon Highlanders, famous "Ladies from Hell" unit of the British Army; he was in service for two and one-half years.

He is survived by his wife, Isabella, and two sons—Patrick George, of Alma, and Thomas Michael, of Waukesha, Wisconsin. He also leaves his mother, who resides in Manistique.

RENAL AND NEUROGENIC FACTORS IN HYPERTENSION

(Continued from Page 1423)

10. Nowak, S. J. G., and Samaan, A.: Technique for perfusing the isolated head connected to the trunk only by the spinal cord and the vagus nerves. *Compt. Rend. Soc. de Biol.*, 115:184, 1934.
11. Ogden, E.: Relation of the nervous system to acute and chronic experimental hypertension. Factors regulating Blood Pressures. P. 12. New York: Josiah Macy, Jr. Foundation, 1947.
12. Page, I. H.: A method for producing persistent hypertension by cellophane. *Science*, 89:273, 1939.
13. Ratliff, R. K., and Conger, K. B.: Incidence of renal hypertension and of cure by nephrectomy. *J. Urol.*, 48:136, 1942.
14. Skeggs, L. T., Kahn, R. J., and Shumway, N. P.: The isolation of hypertensin from the circulating blood of normal dogs with experimental renal hypertension by dialysis in an artificial kidney. *Circulation*, 3:384, 1951.
15. Smithwick, R. H.: The effect of sympathectomy upon the mortality and survival rates of patients with hypertensive cardiovascular disease. *Hypertension*, Minneapolis: Univ. of Minn. Press, 1951.
16. Taquini, A. C.: The production of a pressor substance by the totally ischemic kidney. *Am. Heart J.*, 19:513, 1940.
17. Yuile, C. L.: Obstructive lesions of the main renal artery in relation to hypertension. *Am. J. M. Sc.*, 207:394, 1944.

Distinguished by Achievement!



A new suit of clothes will heighten any man's self-confidence. But a new OXXFORD suit, fitted in the personalized Kilgore and Hurd manner, also adds to the confidence which others have in you. OXXFORD styles this Winter are in good selection. Of particular interest is the range of beautiful flannels in models of absolute distinction. We invite your inspection.

KILGORE and HURD

1259 WASHINGTON BLVD IN THE BOOK TOWER

Communications

September 20, 1951

Wm. J. Burns, Executive Director
Michigan State Medical Society
606 Townsend Street
Lansing 15, Michigan

Dear Mr. Burns:

Reference is had to your communication of September 17 relative to the inquiry made concerning the liability of patient or attending physician for payment of consultant's services.

The legal question is one of implied authority. Does an attending physician have authority to engage on behalf of his patient the services of a consultant, without express authority or consent of the patient? As far as we are able to determine, this specific question has never been directly passed on by any appellate court. There are no cases in point in the Michigan Reports. Nor do more general works, such as American Jurisprudence, Corpus Juris Secundum, A. L. R., text books on medical jurisprudence, cite any cases covering the question. Indeed, we have been unable to find even a text book or encyclopedical comment on the exact point.

One must, therefore, have resort to general principles of the law of agency and doctor-patient relationship to reach a reasonable conclusion, which may, however, not coincide with the opinion of a court were the situation brought into litigation.

Unfortunately, the facts furnished are not sufficiently exhaustive to differentiate the problem at hand from other similar ones in which the facts may alter the conclusion.

In many cases, when a patient engages a doctor to treat and attend him, there is implied authority to commit the patient to certain expenses and even services by others, e.g., making x-ray plates by technicians or roentgenologists, or in surgical operations the services of anesthetist and surgical nurse. Certainly, when a medical emergency arises and the patient is unconscious, or is not in condition to discuss the situation, the attending physician has implied authority to do what in his judgment is medically indicated on humanitarian grounds. However, there is grave doubt that in ordinary cases the attending physician is authorized to engage a consultant, perhaps a high-priced one, without express consent of the patient, if the patient is in condition to give such authority or consent. In other words, it is doubtful that the mere engagement of a physician to diagnose or treat a patient gives such physician blanket authority to engage other physicians without the patient's express consent. As pointed out, emergent peculiar circumstances may tend to ameliorate this conclusion, but the facts furnished do not indicate such unusual situation. The mere fact that the patient did not object when the consultant examined him is not sufficient, in my opinion, to be regarded as consent to

pay for his services. It is not uncommon for physicians to call in professional colleagues to view unusual cases, and a patient cannot be presumed to have engaged the services of an additional physician merely because he didn't object to his viewing or even examining him.

It is my conclusion, therefore, that unless there were some unusual circumstances not disclosed in your letter, the patient is probably not liable for the consultant's fee. It follows that the attending physician is the one to whom the consultant must look for his compensation.

Very truly yours,

J. JOSEPH HERBERT
Legal Counsel
Michigan State Medical Society

* * *

October 29, 1951

Dear Doctor:

We previously announced that effective October 1, 1951, Diagnostic X-ray benefits under Michigan Medical Service surgical and medical-surgical certificates were being liberalized.

In the interest of clarification, it is necessary to make certain changes in the Diagnostic X-ray rider. A copy of the revised rider, 50-105R1, is attached.

There seems to be a considerable amount of misunderstanding regarding the liberalization of diagnostic x-ray effective October 1, 1951. It should be borne in mind that all other conditions of the contract remain as they are, even as to the circumstances under which diagnostic x-ray is a benefit.

The Diagnostic X-ray Liberalization is intended *only to eliminate the \$15.00 maximum limit per certificate year*. It does not liberalize or broaden the conditions under which a diagnostic x-ray service qualifies as a benefit.

I. Item 4(a)1 of the rider is interpreted as follows:

1. Diagnostic x-ray benefits per fee schedule to the value of \$15.00 are available per bed patient admission.

Example 1.

A subscriber is admitted on 10-2-51 and discharged 10-12-51. X-rays are taken to the fee schedule value of \$10.00. Michigan Medical Service pays \$10.00. The subscriber is again admitted as a bed patient on 10-21-51, either for the same or for a different medical cause and x-rays are taken to the fee schedule value of \$15.00. Michigan Medical Service will now pay the fee schedule of \$15.00 under the liberalization rider.

2. The wording "during or thirty (30) days prior" permits liberalization for diagnostic x-rays taken within 30 days prior to an admission for an

eligible related service but restricts the total value to \$15.00.

Example 2.

A subscriber has x-rays taken in the Doctor's office or out-patient department on October 2, 1951 equal to a fee schedule value of \$15.00 and is subsequently admitted as a bed patient for an eligible related service. During the period of hospitalization, x-rays are taken to the fee schedule value of \$15.00. The x-rays taken prior and during the hospital stay are considered one disability and Michigan Medical Service will pay only to the fee schedule value of \$15.00. The x-rays taken in the out-patient department of a hospital or in a Doctor's office must be reported to Michigan Medical Service before the patient is admitted to the hospital or the x-rays taken during the hospital stay will have priority for the benefit.

II. Item 4(a)2 defines the conditions under which diagnostic x-rays are a benefit when the subscriber is other than a bed patient.

1. Each separate disability is defined to mean a complete incidence of service and is not a restriction for a continuing medical condition. It is necessary, however, that the x-ray be related and rendered in connection with an eligible office or out-patient surgical procedure or in connection with emergency accident care within the 24-hour limitation.

Example 1.

On October 8, 1951, a subscriber has an x-ray in the Doctor's office or out-patient department in connection with the removal of Aural Polyps. Michigan Medical Service pays a \$10.00 x-ray benefit. On October 22, the patient has a \$10.00 x-ray in connection with a Submucous Resection. Michigan Medical Service will again assume x-ray charges per schedule up to \$15.00. The fact that both services were related to the same medical cause has no bearing in the case. The x-rays to the value of \$15.00 were available in connection with each eligible incidence of service.

Example 2.

A subscriber received emergency accident care in a Doctor's office or in the out-patient department involving an x-ray benefit of \$10.00 within 24 hours from the time of the accident and subsequently requires bed patient care. During the period of hospitalization he would again be entitled to receive x-ray benefits to the value of \$15.00.

Very truly yours,

R. L. Novy, M.D.

President

Michigan Medical Service

OUR ONLY
SPECIALTY

Prescription Work

FOR

SURGICAL CORSETS

SPINAL BRACES

ARTIFICIAL LIMBS

LEG BRACES

and

COMPLETE RANGE

OF ORTHOPEDIC

APPLIANCES

•

**D. R. COON
COMPANY**

4200 WOODWARD AVE.

CORNER OF WILLIS

TEMPLE 1-5103

DETROIT 1, MICH.

COMMUNICATIONS

October 25, 1951

Wilfrid Haughey, M.D.
Editor, JMSMS
610 Post Building
Battle Creek, Michigan

Dear Doctor Haughey:

Since the organization of this Committee, little has been done to acquaint the physicians and hospitals of the State with the important duties we have to perform. To combat this, we issued two bulletins to all hospitals, which appeared in the October 22 issue of the *Detroit Medical News*.

It is just as important to acquaint all physicians with this program as well as those directly connected with the hospitals. It is therefore, our thought that if these bulletins were placed in *THE JOURNAL*, this information would reach the medical profession throughout the entire State.

We enclose copies of these bulletins, and request your consideration in favor of having them run in *THE JOURNAL*, which would be much appreciated.

Sincerely yours,

GROVER C. PENBERTHY, M.D.
Chairman,
Michigan Volunteer Advisory
Committee to Selective
Service System

* * *

BULLETIN NO. 1

To: All Hospitals in the State of Michigan

Subject: The organization and duties of the Michigan Volunteer Advisory Committee

In seeking closer co-operation between hospitals in the State, and the Michigan Volunteer Advisory Committee, it is thought that few have a clear understanding of the reason for the establishment and duties of this Committee. Therefore, this bulletin is being issued to clarify these questions.

1. ORGANIZATION:

Public Law 779—81st Congress, an Act to amend the Selective Service Act of 1948 so as to provide for special registration, classification, and induction of certain medical, dental, and allied specialist categories, was approved and passed by Congress September 9, 1950. The following excerpt is quoted from this Law:

"(j) The President shall establish a National Advisory Committee which shall advise the Selective Service System and shall co-ordinate the work of such State and local volunteer advisory committees as may be established to co-operate with the National Advisory Committee, with respect to the selection of needed medical and dental and allied specialist categories of persons as referred to in subsection (i). The members of the National Advisory Committee shall be selected from among individuals who are outstanding in medicine, dentistry, and the sciences allied thereto, but except for the professions of medicine and dentistry, it shall not be mandatory that all such fields of endeavor be represented on the committee.

"In the performance of their functions, the National Advisory Committee and the State and local volunteer advisory committees shall give appropriate consideration to the respective needs of the Armed Forces and of the civilian population for the services of medical, dental, and allied specialist personnel; and, in determining the medical, dental, and

allied specialist personnel available to serve the needs of any community, such committees shall give appropriate consideration to the availability in such community of medical, dental, and allied personnel who have attained the fifty-first anniversary of their birth."

When the National Advisory Committee was appointed by the President of the United States, it, in turn, appointed a Volunteer Advisory Committee in each State in the Union. Hence, the Michigan Volunteer Advisory Committee was appointed by Washington and consists of four members:

Grover C. Penberthy, M.D., Chairman
Albert E. Heustis, M.D.
J. Orton Goodsell, D.D.S.
C. F. Clark, D.V.M.

To care for the interests of all communities in the State, a local Committee was established for each County under the direction of the State Chairman.

The State Committee is responsible to the National Advisory Committee. The County Committees are responsible to the State Committee.

2. DUTIES AND RESPONSIBILITIES:

Before a physician can be inducted into the Armed Services, his Local Draft Board must obtain the recommendations of the State Committee pertaining to his essentiality or availability.

Similarly, all branches of the Armed Services, such as the Army, Navy, Air Force, Marine Corps, Coast Guard or the Public Health Service, are required to obtain a recommendation from the State Committee pertaining to a Commissioned Officer's essentiality or availability before calling him to active duty.

All requests by hospitals and schools for delay in orders for a special registrant, must be channeled through the State Committee. This also applies to communities where a physician is considered essential to the health and welfare of that community.

The State Committee depends on the local Committee of each County to furnish the necessary information pertaining to a physician's essentiality.

There have been one or two instances in the past where hospitals or individuals went direct to Headquarters Fifth Army requesting deferment for a Commissioned Officer after he had received orders to active duty. A deferment was granted by Headquarters Fifth Army without having the recommendations of the State Committee. This Committee was questioned by Washington concerning the deferment, but not having made the request we were unable to give the reason. As a result, all branches of the Armed Services have been notified that deferments cannot be granted on grounds of essentiality without first obtaining the recommendations of the State Committee.

When a physician is considered essential to a hospital or school, a letter from the hospital fully stating the reason for his essentiality must be submitted to the State Chairman, accompanied by a letter of acquiescence from the physician. The case is then presented to the local County Committee for their recommendations. If the County Committee recommends deferment, the State Chairman then requests the branch of the service concerned to give consideration to a delay in orders. In the case of a non-commissioned physician classified I-AM, the request for reclassification is directed to the Selective Service System.

Generally speaking, the various branches of the Armed Services honor the recommendations of the State Committee and grant a deferment when requested. In some instances, however, the request has been rejected.

The National Advisory Committee in Washington receives a list of call-ups for each month from all branches of the Armed Services. They are also notified by these

COMMUNICATIONS

branches of deferments granted to individuals on the basis of essentiality. The National Committee in Washington does not always concur in the recommendations made by the State Committee, and in such instances will call in all records pertaining to the case for review. In the case of hospital staff, this includes staffing a year ago, and two years ago, the department involved, and by totals. In the case of communities, complete details as to the situation must be submitted.

From the foregoing you will understand that this office has been established by the Federal Government, and is being run unlike anything of a similar nature set up during World War II. We come directly under the dictates of Washington. With this information it is hoped that our position will be clarified.

GROVER C. PENBERTHY, M.D.
Chairman

October 5, 1951

BULLETIN NO. 2

To: All hospitals in the State of Michigan

Subject: Replacements for priority I physicians

Many hospitals in the State have a number of Priority I physicians on their full-time staff and in residency training programs. Under Public Law 779, all Priority I physicians must be called for active duty before Priority II is called.

The National Advisory Committee in Washington issued a Bulletin dated August, 1951, in which they state that all Priority I must be depleted by July, 1952. They urge that these physicians be replaced by this date, including those who have been reclassified II-A. Similarly, the men who are already commissioned, and whose call to service has been delayed, should be released as soon as possible. We must therefore ask you to make a serious effort to seek replacements for all Priority I physicians so that they can be released not later than July, 1952.

We are informed that the American Medical Association has established a new residency information service, and hospitals seeking residents in any particular field may take advantage of this service. In the event no replacement is possible, all information pertaining to the case will be forwarded by this office to the National Advisory Committee for their review.

We are anxious to co-operate to the fullest extent with all hospitals, but it is thought there are some instances where sufficient effort is not being made to secure replacements.

Your co-operation with this Committee will be deeply appreciated.

GROVER C. PENBERTHY, M.D.
Chairman

October 9, 1951

* * *

November 9, 1951

Dr. Wilfrid Haughey, Editor
Battle Creek, Michigan

Dear Wilfrid:

For some time I have been meaning to write you in congratulation and appreciation of the October number of THE JOURNAL featuring the Michigan Foundation.

I have rarely seen a more adequate, better organized or more dignified informative article than "Leading in Learning." For the type of individuals or interested groups that we should be approaching, it would seem to me that this article deserves reprinting and proper distribution.

It is not only that we expected more contributions from the doctors but we hoped for more effort on the part of the doctor in getting contributions from his friends and patients. Some of us have been able to pick

DECEMBER, 1951

Say you saw it in the Journal of the Michigan State Medical Society

Now Council-accepted

HYCODAN[®] BITARTRATE

ENDO brand of dihydrocodeinone bitartrate

For selective cough therapy

3 FORMS: Oral tablets (5 mg.); syrup (5 mg. per teaspoonful); and powder (for compounding). Average adult dose 5 mg. May be habit forming; narcotic blank required. Literature sent on request.

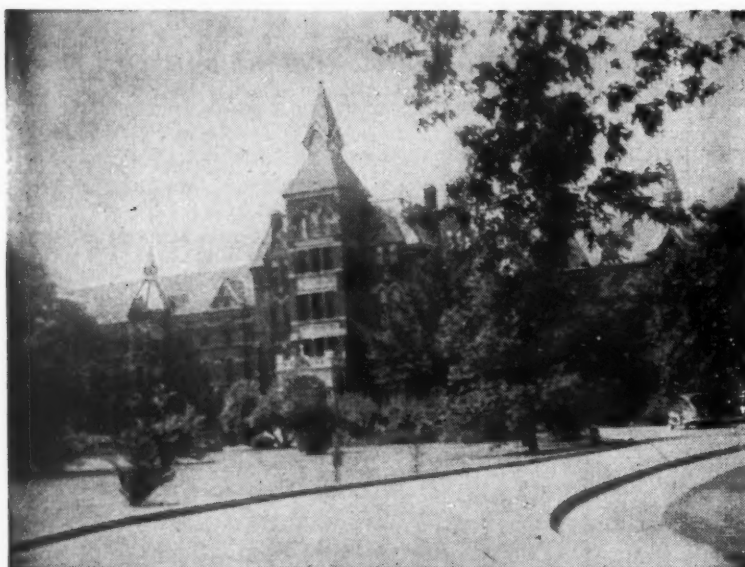
THE G. A. INGRAM COMPANY

4444 Woodward Avenue

Detroit 1, Michigan

• Licensed by State of Michigan, Dept. of Mental Health • Registered by American Medical Association

ST. JOSEPH'S RETREAT



Founded in 1860

*Under direction of
Daughters of Charity
of St. Vincent de Paul*

Newly reorganized and modernized for individualized care and treatment of the nervous and mentally ill and alcoholics.

*Martin H. Hoffmann, M. D.
Medical Superintendent*

23200 Michigan
DEARBORN • near Detroit
LOgan 1-1400

Cook County Graduate School of Medicine

ANNOUNCES CONTINUOUS COURSES

- SURGERY**—Intensive Course in Surgical Technic, two weeks, starting January 21, February 4, February 18.
Surgical Technic, Surgical Anatomy and Clinical Surgery, four weeks, starting March 3, June 2.
Surgical Anatomy and Clinical Surgery, two weeks, starting March 17, June 16.
Surgery of Colon and Rectum, one week, starting March 3, April 7.
Gallbladder Surgery, ten hours, starting April 21.
Basic Principles in General Surgery, two weeks, starting December 10, March 31.
Breast and Thyroid Surgery, one week, starting June 23.
Esophageal Surgery, one week, starting June 23.
Thoracic Surgery, one week, starting June 2.
GYNECOLOGY—Intensive Course, two weeks starting February 18, March 17.
Vaginal Approach to Pelvic Surgery, one week, starting March 3, March 31.
OBSTETRICS—Intensive Course, two weeks, starting March 3, March 31.
MEDICINE—Intensive General Course, two weeks, starting May 5.
Electrocardiography and Heart Disease, two weeks, starting March 17.
Gastroenterology, two weeks, starting May 19.
Hematology, one week, starting June 16.
UROLOGY—Intensive Course, two weeks, starting April 28.
Ten-day Practical Course in Cystoscopy, starting January 7, January 21, and every two weeks.
ROENTGENOLOGY—Two-week Lecture and Clinical Courses each month.
General, Intensive and Special Courses in All Branches of Medicine, Surgery and the Specialties

**TEACHING FACULTY—ATTENDING
STAFF OF COOK COUNTY HOSPITAL**

ADDRESS: REGISTRAR, 427 South Honore Street
Chicago 12, Illinois

up some immediate contribution and, once in a while, the positive statement that the individual had arranged for it in his will. We need a lot more. Perhaps this article will serve as something of a stimulant.

Congratulations again on a mighty good article.

Very sincerely yours,
BURTON R. CORBUS

BENEFICIARIES OF FEDERAL GOVERNMENT

In 1932, there were 2,196,151 individuals receiving monthly checks from the Federal Government. Today, nineteen years later, the total of 17,665,783. The 1951 recipients, taken from the Congressional Record, are divided as follows:

Federal civilian workers	2,409,121
Federal retired workers	166,081
Old-age assistance	2,766,866
Dependent children	1,639,107
Federal aid to blind	95,521
Disabled children	70,745
Public assistance	418,000
Old-age pensions	3,605,235
Veterans' pensions	2,368,238
Veterans' dependents	658,123
Military personnel	3,300,000
Retired military pensions	135,923
Coast Guard personnel	26,498
Coast Guard pensions	6,325

Total 17,665,783

—Detroit Free Press, Tuesday, Sept. 25, 1951.



NEWS MEDICAL

James Milton Robb, M.D., Detroit, Past President of the Michigan State Medical Society, is the incoming President of the American Academy of Ophthalmology and Otolaryngology. Dr. Robb was elected at the September, 1950, meeting and will take office January 1, 1952.

A. D. Ruedemann, M.D., Detroit, was re-elected Secretary for Instruction in Ophthalmology, at the October, 1951, Annual Session of the AAOO.

An Honor Key Award was presented to Cecil W. Lepard, M.D., Detroit.

Life Fellows named were Neil I. Bentley, M.D., and Raymond S. Goux, M.D. Senior Fellows were Audrey O. Brown, M.D., Thomas P. Clifford, M.D., T. F. Keating, M.D., E. E. Poos, M.D., William S. Summers, M.D., and William P. Woodworth, M.D.

* * *

April 1, 1952, is the deadline date for submission of the best original contribution on any phase of chest disease, the annual essay award offered by the American College of Chest Physicians. The grand prize includes an award of \$250. For details, write the College at 112 E. Chestnut Street, Chicago 11, Illinois.

* * *

More than 10,000 persons annually pay their own expenses to and from Detroit for the privilege of walking 10 miles through the laboratories of Parke, Davis & Company, Detroit, according to H. J. Loynd, President of Michigan's 85-year-old pharmaceutical manufacturing company.

* * *

"Air-Call."—A New York City telephone answering service has introduced a person-to-person radio communication system, known as "Air-Call" that enables physician subscribers anywhere within a 25-mile radius of the center of the city to be paged any place they may be except in an underground area.

The subscriber carries a radio receiver weighing 165 grams and 4 inches long in a plastic case. By holding the device to his ear and pressing a button he can hear his code number if he is being paged. He then telephones "Air-Call" headquarters and receives his message. The code numbers will be broadcast every minute for one hour unless answered in the meantime. Unanswered phone calls to the subscriber's office are automatically relayed to the "Air-Call" message center.

Engineers, repairmen, special messengers, salesmen and attorneys also subscribe for and use this service. It also has been adopted by some hospitals and ambulance services. Its life-saving record already is an imposing one, although it has been in operation less than two years.

DECEMBER, 1951

Offered at Public Sale!

One broken-down Brannan Plan
One socialized medicine scheme.
One million bottles of red ink.
One million pounds Polish ham.
One afternoon mail delivery, badly used.
One hundred million pounds of strong butter, unfit for hogs.
One million pumpkins, good for hiding important papers.
Unlimited quantity, State Department sleeping pills, no prescription needed.
Terms: New Deal 57-cent dollars.
A deep freeze free to first 100 customers. Hurry! Hurry! Hurry!
Your dollar will be worth much less.

—*The Bulletin*, Saginaw County Medical Society, October, 1951.

* * *

Michigan Authors

Meyer O. Cantor, M.D., Detroit, is the author of an original article entitled "Mercury Lost in the Gastrointestinal Tract" which appeared in *JAMA* of June 9, 1951.

Sidney Friedlaender, M.D., and Alex S. Friedlaender, M.D., Detroit, are authors of an original article "Oral Cortisone Therapy in Allergic Diseases" which appeared in *The Journal of Allergy*, July, 1951.

Robert C. Bassett, M.D., Ann Arbor, and H. Harvey Gass, M.D., Detroit, are authors of an original article entitled "Ligation of Internal Carotid Artery" which appeared in *JAMA* of October 27, 1951.

Vernon H. Plager, M.D., Harry M. Nelson, M.D., and Donald C. Beaver, M.D., Detroit, are authors of clinical notes on "Endometriosis of Cervix Uteri with Large Endometrial Cyst" which appeared in *JAMA* of October 27, 1951.

Donald E. Van Hoek, M.D., and Merle M. Musselman, M.D., Eloise, are authors of clinical notes on "Diaphragmatic Hernia and Anemia after Transabdominal Vagotomy" which appeared in *JAMA* of October 27, 1951.

G. L. Waldbott, M.D., of Detroit, published an article, "Evaluation of the Pattern in Industrial Dermatitis of the Hands," in *Industrial Medicine and Surgery*, October, 1951.

Harold F. Falls, M.D., and James V. Neel, M.D., Ph.D., of Ann Arbor, published an article, "Genetics of Retinoblastoma," in the *American Medical Association Archives of Ophthalmology*, October, 1951.

NEWS MEDICAL

Walter Z. Rundles, Jr., M.D., and Harold F. Falls, M.D., of Ann Arbor published an article, "Congenital Arteriovenous (Racemose) Aneurysm of the Retina: Report of Three Cases," in the American Medical Association *Archives of Ophthalmology*, October, 1951.

V. Everett Kinsey, Ph.D., of Detroit, published an article, "Annual Reviews: Physiologic Chemistry of the Eye: A Review of Papers Published During 1950," in the American Medical Association *Archives of Ophthalmology*, October, 1951.

Schayel R. Scheinberg, M.D., and Harry C. Saltzstein, M.D., of Detroit, published an article, "Effect of Cortisone and Corticotrophin (ACTH) on Intra-Abdominal Adhesions," in American Medical Association *Archives of Surgery*, October, 1951.

D. Emerick Szilagyi, M.D., Gilbert D. Jay III, M.D., and Edward D. Munnel, M.D., of Detroit, published an article, "Femoral Arteriovenous Anastomosis in the Treatment of Occlusive Arterial Disease," in American Medical Association *Archives of Surgery*, October, 1951.

Elisha S. Gurdjian, M.D., John E. Webster, M.D., and Francis Martin, M.D., of Detroit, published an article, "Gasometric Studies in Carotid-Internal Jugular Anastomosis in the Neck: Preliminary Report on Human Experiences," in American Medical Association *Archives of Surgery*, October, 1951.

John M. Hammer, M.D., H. Sidney Heersma, M.D., John R. MacGregor, M.D., and Robert S. Dew, M.D., of Kalamazoo, and Eugene A. Osius, M.D., of Detroit, published an article, "Complications and Effects Observed in Thirty-three Patients with Cervical Arteriovenous Fistulas," in the American Medical Association *Archives of Surgery*, October, 1951.

Sigmund Zawacki, M.D., and E. T. Thiene, M.D., of Ann Arbor, published an article, "Study of the Types of Recurrence following Inguinal Herniorrhaphy," in the American Medical Association *Archives of Surgery*, October, 1951.

Rudolf J. Noer, M.D., Herbert J. Robb, M.D., and Lyle F. Jacobson, M.D., of Detroit, published an article "Circulatory Disturbances Produced by Acute Intestinal Distention in the Living Animal," in the American Medical Association *Archives of Surgery*, October, 1951.

Manousos Angel Petrohalos, M.D., and John Woodworth Henderson, M.D., of Ann Arbor, published an article, "The Ocular Findings of Intracranial Tumor," in the *American Journal of Ophthalmology*, October, 1951.

William S. Reveno, M.D., and Herbert Rosenbaum, M.D., of Detroit, "Treatment of Acute Thyroiditis with Antithyroid Drugs," in the *New England Journal of Medicine*, Sept. 6, 1951.

Paul Sugar, M.D., is the author of a new book, "The Glaucomas" published by C. V. Mosby Company.

* * *

State Health Commissioner A. E. Heustis, M.D., Lansing, was elected a Trustee of Michigan Hospital Service for a three-year term, at the Michigan Blue Cross meeting of October 26.

Congratulations, Dr. Heustis!

J. W. Towey, M.D., Powers, was reappointed by the Governor to the Michigan Tuberculosis Sanatorium Commission on October 15, 1951.

* * *

L. G. Christian, M.D., Lansing, was reappointed by the Governor to the Michigan Social Welfare Commission on September 20, 1951.

* * *

The Institute of Industrial Health of the University of Cincinnati is accepting applications for a limited number of fellowships offered to qualified candidates who wish to pursue a graduate course of instruction in preparation for the practice of Industrial Medicine. The stipends for the fellowship, during the first two years, run from \$2,100 to \$3,000; in the third year the candidate will be compensated for his service by the industry in which he is completing his training. For additional information, write the Institute of Industrial Health, College of Medicine, Eden and Bethesda, Cincinnati 19, Ohio.

* * *

The International Congress of Ophthalmology will hold its seventeenth meeting in New York City in October, 1954. For particulars, write William L. Benedict, M.D., Secretary-General, Mayo Clinic, Rochester, Minn.

* * *

Martin H. Hoffmann, M.D., Detroit, has been appointed by State Senator Elmer R. Porter as a member of the State Committee to Study the Mental Health Program in Michigan. Chairman Porter selected Dr. Hoffmann from a list of nominees requested of the MSMS.

* * *

E. Dwight Barnett, M.D., Detroit, who has been Superintendent of Harper Hospital for a number of years, left Michigan on January 1, to assume the position of Professor of Administrative Medicine and Director of the Institute of Administrative Medicine, College of Physicians and Surgeons, Columbia University, New York.

* * *

Herbert Acuff, M.D., Knoxville, Tennessee, who was MSMS Biddle Orator for 1949, died suddenly at his home on October 31. Dr. Acuff was President of the International College of Surgeons at the time of his death.

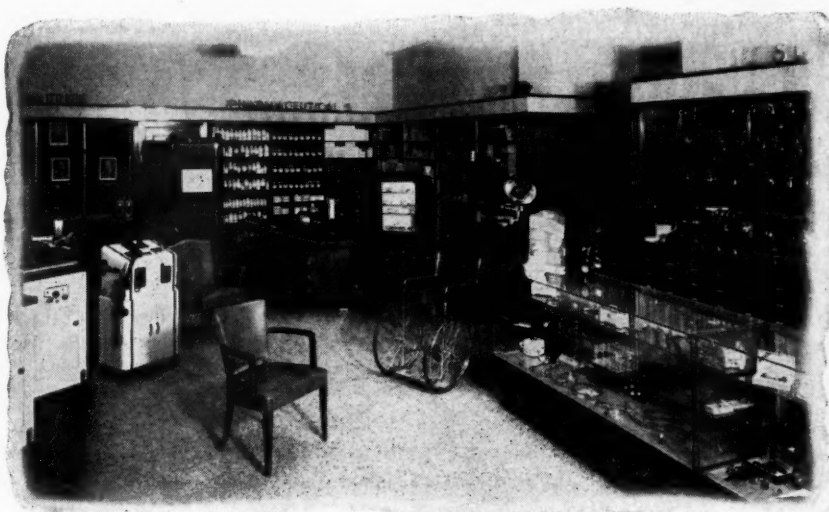
* * *

The International College of Surgeons, United States Chapter, will hold a regional scientific meeting at the Statler Hotel, Detroit, on Thursday and Friday, April 24 and 25, 1952. This regional meeting will be comprised of Fellows, members and other Doctors of Medicine from Michigan, Illinois, Wisconsin, Indiana, Kentucky, Ohio, and the Province of Ontario.

Warren W. Babcock, M.D., Detroit, is Chairman of Arrangements for the April 24-25 meeting, to which all members of the Michigan State Medical Society who are interested in modern surgical procedures are cordially invited to attend. Preliminary program may be obtained by writing Dr. Babcock at 868 Fisher Bldg., Detroit 2, Michigan.

★ Conveniently Located in Grand Rapids ★

- Hospital Equipment
- Pharmaceuticals
- Office Equipment
- Physicians' Supplies
- Trusses
- Surgical Garments
- Physiotherapy Machines



MEDICAL ARTS SURGICAL SUPPLY CO.

24 Sheldon Ave. S.E.

Telephone 9-8274

Grand Rapids, Mich.

Oliver Field, Director of the Bureau of Investigation of the American Medical Association, addressed the Lansing Rotary Club on October 19; the East Lansing Kiwanis Club on October 22, and the Lansing Lions Club on October 23. His subject was "Mechanical Quackery."

* * *

Inflation—forced out of bounds by hopelessly unsound fiscal policies of deficit spending and dollar devaluation—has shrunk the Social Security dollar, along with every other dollar, so drastically that the recipient (of old-age benefits) dismally faces becoming a public charge.

Before the New Deal, many people had old age security.

Now nobody has it!—California Feature Service, July 16, 1951.

* * *

Some 16,000 persons drew \$6,309,000 monthly pension checks in ninety countries outside the United States last year.

That makes big shots of some pensioners in their old country!

The checks are paid in dollars and they are not subject to U. S. income taxes.

* * *

Return of the Family Doctor.—Today the Michigan family doctor keeps informed on the swift advances within his science and yet spends a minimum of time away from his patients. This is done in "hometown" postgraduate courses offered through the combined ef-

forts of the Michigan State Medical Society, the University of Michigan Department of Postgraduate Medicine, Wayne University College of Medicine and a special organization founded by the State Society—the Michigan Foundation for Medical and Health Education.—From *Inside Michigan* (October, 1951, Number)

* * *

The Upper Peninsula Medical Society will hold its 1952 meeting in Iron Mountain on Friday and Saturday, June 27-28, 1952. D. R. Smith, M.D., Iron Mountain, is President, and E. Theodore Palm, M.D., Crystal Falls, is Secretary of the Dickinson-Iron County Medical Society. All MSMS members are cordially invited to attend this excellent scientific session. For program, write Secretary Palm, Crystal Falls.

* * *

Cornerstone for the new \$3,000,000 Kresge Medical Research Building of the University of Michigan was laid in Ann Arbor on November 5. More than 200 University officials and members of the Medical School attended the formal ceremonies.

* * *

The American Society for the Study of Sterility announces the opening of the 1952 contest for the most outstanding contribution to the subject of infertility and sterility. The winner will receive a cash award of one thousand dollars, and the essay will appear on the program of the 1952 meeting of the Society. Essays submitted in this competition must be received not later than March 1, 1952. For full particulars, address The

Del Vista Sanitarium

PLAINWELL, MICHIGAN

Member American Hospital Association

EDWIN M. WILLIAMSON, M.D.

Psychiatrist-in-Chief

Professional care for the nervous
and mentally ill.

Telephone 2841



Restful Six-acre Estate Overlooking the Kalamazoo River.

American Society for the Study of Sterility, 20 Magnolia Terrace, Springfield, Massachusetts.

* * *

Eugene A. Osius, M.D., Detroit, Wm. J. Burns, Lansing, and H. W. Brenneman, Lansing, were elected Honorary Members of the Michigan State Medical Assistants Society at its September meeting in Grand Rapids.

* * *

The American Academy of Obstetrics and Gynecology was incorporated on August 4, 1951, as a non-profit corporation under the laws of the State of Illinois. It replaces the National Federation of Obstetric-Gynecologic Societies. Its first meeting will be held on the occasion of the Fifth American Congress on Obstetrics and Gynecology in Cincinnati March 31-April 4, 1952. For full information or for Fellowship application, write Ralph A. Reis, M.D., Secretary, 116 S. Michigan Ave., Chicago 3.

* * *

The Jackson County Medical Society's Clinic Day will be held April 3, 1952, at the Hayes Hotel, Jackson, Michigan. All members of the Michigan State Medical Society are cordially invited to attend.

* * *

Michigan Medical Class.—The University of Michigan, with a freshman medical class of 204, has the largest such class enrolled in any medical school in the United States. The university increased its entering class by thirty-nine over last year.

* * *

Michigan has a total of 6,937 physicians and a population of 6,371,766 persons; this results in a ratio of 1 physician for 919 persons. Apparently Michigan is less well supplied with physicians than the nation as a whole. The statistics on number of physicians in the United States and in Michigan include those who are retired and not now practicing. Included also are those doctors who are engaged in public health work, hospital services and government medical service. Physicians are increasing in number less rapidly than the total population. The population of the country increased faster than did the number of medical doctors from 1910 to 1950. At present there are more persons per physician than in 1920 or

1910.—From "Distribution of Doctors of Medicine and Osteopaths in Michigan Communities," Special Bulletin 370, June, 1951, Michigan State College Social Research Service.

* * *

C. D. Selby, M.D., of the School of Public Health, University of Michigan, Ann Arbor, addressed the Rhode Island Cancer Conference, Providence, Rhode Island, on October 17. His subject was "Physical Examination in Industry as a Cancer Case-Finding Procedure."

* * *

The second annual Dr. Eldwin R. Witwer Memorial Lecture, sponsored by the Medical Staff of Bon Secours Hospital, Detroit, was presented on October 30 by Harvey M. Merker, D.Sc., who spoke on "The Romance of Medicine." Dr. Merker presented the human interest story behind some of the recent important medical advances.

The late E. R. Witwer, M.D., was a long-time member of the MSMS Council and radiologist at Harper Hospital, Detroit.

* * *

Cyrus C. Sturgis, M.D., Ann Arbor, was inducted as President of the Interstate Postgraduate Medical Association of North America at its St. Louis meeting of October 22-25, 1951.

Congratulations, Dr. Sturgis!

* * *

"A resolution presented by the Washtenaw County Medical Society to the effect that all members of the Michigan State Medical Society be urged to contribute \$100 per year for ten years to pay back some of our debt to the State of Michigan for medical education, was approved. This money will be placed in the American Medical Education Foundation Fund, for use to make up deficit in operation of medical schools."—From *The Bulletin* of the Washtenaw County Medical Society, October, 1951, in "Report of MSMS House of Delegates, 1951."

* * *

It would be good Public Relations to acquaint the people of the community with the fact that we do have

NEWS MEDICAL

a shortage of doctors; to endeavor to educate them as to what a medical emergency consists of, and to the fact that many types of illness are not endangered by being brought outdoors and to the physician's office. Along with this "education of the public" program, I think a plan to handle true emergency calls in the home must be formulated by the members of this Society."

—T. J. KANE, M.D., President, *Muskegon County Medical Society Bulletin*, October, 1951.

* * *

The Muskegon County Medical Society takes care of the student examinations for high school athletes according to a joint plan worked out with the high school principals.

This is a program that could be emulated in all parts of the state by other county medical societies to the advantage of the athletes and the medical profession.

* * *

The Ingham County Medical Society Bulletin (October, 1951) prints its "Intern-Resident Lecture Schedule" at Sparrow Hospital, Lansing, for the year 1951. The Society uses thirty busy Lansing practitioners (several two, three and four times) to present this schedule.

* * *

The Wayne County Medical Society is contributing \$200 for the proposed Detroit Civic Auditorium.

* * *

Michigan Medical Service is now giving health protection to more than 2,300,000 people. Of this number, 961,502 persons are enrolled under the combined medical-

surgical plan. This represents 41.8 per cent of the total enrollment of persons who have complete protection with this combined plan. Over 10,000 employers have made Blue Shield available to their employees. Out of a potential population of 6,371,766, there are over 36 per cent of that number who have chosen Blue Shield as their form of medical care. In 1950, there were 600,969 new subscribers enrolled.

—From "Rant and Rave" column of *Detroit Medical News*, October 22, 1951.

* * *

The Wayne County Medical Society's Committee on Civil Defense and Disaster sponsored two panel discussions concerning the medical and surgical aspects of atomic warfare as they apply to civil defense. These meetings were held in the Auditorium of Grace Hospital on October 24 and November 7 and were designed primarily for zone leaders, station leaders and industrial casualty care station leaders.

* * *

E. P. Vary, M.D., Flint, is chairman of the Medical Staff of the new McLaren General Hospital, Flint. Nell M. Ward, M.D., of Flint, is secretary.

Chairman of the Board of Trustees is Mrs. F. B. Miner of Flint, wife of the late Fred B. Miner, M.D., long-time active in Genesee County and Michigan State Medical Society affairs.

* * *

"When doctors finally were able to convince other groups that they were not only fighting for self-interest,

ANNUAL CLINICAL CONFERENCE

CHICAGO MEDICAL SOCIETY

March 4, 5, 6, 7, 1952 • Palmer House, Chicago

Special Feature of the 1952 Conference—DAILY TEACHING DEMONSTRATIONS

Thirty-four outstanding teachers and speakers will present half-hour lectures on subjects of interest to both general practitioner and specialist.

FOUR PANELS ON TIMELY TOPICS.

Scientific Exhibits worthy of real study and helpful and time-saving technical exhibits.

The CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE should be a MUST on the calendar of every physician. Plan now to attend and make your reservation at the Palmer House.



The Mary Pogue School

Complete facilities for training Retarded and Epileptic children educationally and socially. Pupils per teacher strictly limited. Excellent educational, physical and occupational therapy programs.

Recreational facilities include riding, group games, selected movies under competent supervision of skilled personnel.

Catalogue on request.

G. H. Marquardt, M.D. Barclay J. MacGregor
Medical Director Registrar

26 GENEVA ROAD, WHEATON, ILL.
(Near Chicago)

but that they were fighting for the health and welfare of the American people, their support mounted in spectacular fashion and new allies joined Medicine's way by the thousands.—Clem Whittaker of Whittaker and Baxter, Chicago.

* * *

Frank H. Lahey, M.D., Boston, Mass., was guest speaker at the 27th Annual Meeting and Dinner of the Alexander Blain Hospital held in Detroit on November 14.

* * *

Morton Hack, of the Hack Shoe Company, was elected first Vice President of the Michigan Shoe Retailers Association at its annual convention on November 5. He is currently President of the Detroit Shoe Retailers Association.

* * *

"Bay City, Michigan, is justly proud of its unusually well-equipped Fire Department" reads a feature story in the magazine *Blazes* (April-May-June, 1951 issue). This is the official publication of the American-La France-Foamite Corporation of Elmira, New York.

The story mentions the original policy of Bay City's mayor, Elford Cederberg, who appointed a Citizens Advisory Committee for the Fire Department. "For chairman he chose L. Fernald Foster, M.D., a member of the Bay City Fire Fans Club." The story is illustrated with a photograph of Chairman Foster and eight new pieces of equipment recently purchased by Bay City for its Fire Department.

* * *

The III Pan-American Congress of Oto-Rhino-Laryngology will be held in Havana, Cuba, January 20-24, 1952. There will be three main topics of study, (1) Evaluation of Surgery and Irradiation in the Treatment of Laryngeal Cancer. (2) Evaluation of Antibiotics, desensitization and Surgery in the Treatment of Sinusitis. (3) Non-Malignant Stenosis of the Esophagus. Instruction courses will be given by a group of Thirteen Professors. For hotel reservations address the Secretary, Dr. Pedro Hernandez Gonzalo, Gen. Sec. 8 No. 358 Vedado, Havana, Cuba.

* * *

Members of the Michigan State Medical Society now attending postgraduate courses at the Cook County Graduate School of Medicine are: Charles H. Flint, M.D., Hart, and John Ralyea, M.D., Paw Paw.

U. OF M. PRESIDENT INAUGURATED



Harlan H. Hatcher was inaugurated as the eighth president of the University of Michigan on Tuesday afternoon, November 27.

Some 251 universities and colleges and 122 learned and professional societies were represented at the inauguration. A luncheon for the official delegates was held in the Michigan Union Ballroom.

The delegates, in academic costume, assembled in the Natural Science Building and marched to Hill Auditorium where the inaugural ceremony was held.

J. Joseph Herbert, regent of the University from Manistique, presided at the inauguration. Following the invocation and the "Star-Spangled Banner," Howard L. Bevis, president of The Ohio State University, gave an address on "The Unexplored Continent."

The installation of President Hatcher was conducted by Roscoe Bonisteel, regent from Ann Arbor, and the president replied. The "Yellow and Blue" concluded the ceremony. A public reception was held in the Michigan League which closed the inaugural ceremonies.

* * *

The American Board of Obstetrics and Gynecology announces the election of John L. Parks, M.D., of Washington, D. C., as a member and Director of the Board. Dr. Parks succeeds Joseph L. Baer, M.D., who has been Vice President of the Board for over twenty years and who has resigned.

* * *

The American Hospital Association selected three Michigan men to key positions in the national hospital field, at the annual convention in St. Louis, in September. E. Dwight Barnett, M.D., of Detroit, was elected a trustee of the American Hospital Association. Dr. Barnett is Director of Harper Hospital and President of the Michigan Hospital Service, the Blue Cross of Michigan. He is also a director of Michigan Medical Service. Kenneth Babcock, M.D., of Detroit, Director of Grace Hospital, member of the Board of Trustees of Michigan Hospital Service and the Board of Directors of Michigan Medical Service, was elected Chairman of the Council on Prepayment Plans and Hospital Reimbursement. Ron-

DEADLINE ONLY SIX MONTHS AWAY

After June 30, 1952, ALL MEDICAL DIATHERMY MACHINES in order to be Lawfully Used must conform to the requirements of The Federal Communications Commission.

If the Diathermy Unit you are now using does not bear an F.C.C. Type Approval Number, Immediate Action is Recommended by the Journal of the American Medical Association, June 2, 1951, issue, Page 481.

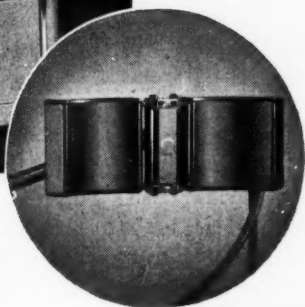
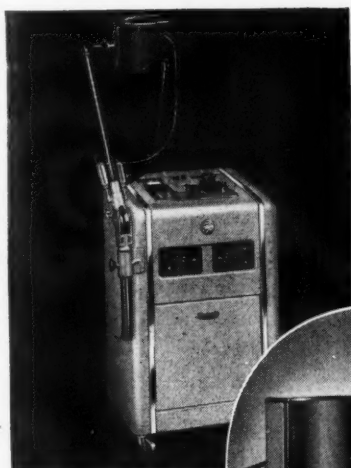
Let us send you complete information on the FISCHER DE LUXE MODEL "400" SHORT WAVE DIATHERMY UNIT.

FISCHER DE LUXE MODEL "400" offers inductance applications with the Patented Adjustable Induction Electrode or inductance cable and can also be used for coagulation and cutting in electrosurgical procedures.

Patented adjustable Induction Electrode, designed especially to fit any part of the body, gives even distribution of heat over entire treatment area.

FISCHER DE LUXE MODEL "400" is the highly efficient, practically trouble-free, self-excited oscillator type—no crystal control or master oscillator.

A digest of the New F.C.C. Ruling on the use of Diathermy Equipment will be sent free and without obligation.



- F.C.C. APPROVAL
Type Approval D-500
- UNDERWRITERS' LABORATORIES APPROVAL
- CANADIAN APPROVAL
Type Approval No. 7



M. C. HUNT

868 Maccabees Bldg., Detroit 2, Mich.

Distributor for

H. G. FISCHER & CO.

ald Yaw, Grand Rapids, Director of Blodgett Memorial Hospital and member of the Board of Directors of Michigan Medical Service, was elected Chairman of the Council on Administrative Practice.

* * *

The American Hospital Association reports that nearly 16,000,000 patients were admitted to acute general hospitals in 1950 as against 7,775,000 in 1936.

Total admissions in all types of hospitals in 1950 exceeded 17,000,000.

The average length of stay for all persons hospitalized in the United States has been cut from fifteen days in 1936 to eight days last year.

* * *

Michigan Hospital Service, since the first of the year, has paid for the hospitalization of its members in fourteen different countries, including Syria, Java, India and Peru.

One Blue Cross member was hospitalized in the ship's infirmary while a passenger on the *S. S. Empress of Scotland*. He paid his bill for the services received, mailed it to Blue Cross, and was promptly reimbursed.

The world-wide coverage provided by Blue Cross holds on sea as well as on land.

* * *

The Michigan Society of Medical Technologists met at the Wayne County General Hospital on November 11 and 12. Mrs. Betty Stearns, of Lansing, presided as the newly elected president. 165 members and guests attended. Those contributing to the program were: Dr. E. S.



Medical research is one phase of the program financed by tuberculosis Christmas Seals. Expansion of the research program has been possible through the years as Seal Sale returns have increased, until now medical research grants by the National Tuberculosis Association total nearly \$200,000 a year.

This year thirty-five investigations are being aided by grants from Christmas Seal funds. The studies can be grouped under six general categories: the tubercle bacillus, anatomy and physiology of the lung, pathology and immunology of tuberculosis, experimental chemotherapy of tuberculosis, clinical treatment of tuberculosis in children and adults, and the epidemiology of tuberculosis and related disease.

—MICHIGAN TUBERCULOSIS ASSOCIATION

Beneke, Mr. Makio Murayama, Dr. G. S. Fisher, Dr. A. A. Cintron Rivera, Dr. D. E. Halsey, Dr. W. J. Nungester and Miss Angela Serafini.

* * *

Harry Becker, director of the Social Security Department of United Auto Workers-CIO since February, 1948, has been appointed associate director of the Commission on Financing of Hospital Care, Chicago. He assumed his new duties on November 15.

THE
MEDICAL PROTECTIVE
COMPANY
FORT WAYNE, INDIANA

*Professional Protection
Exclusively
since 1899*

DETROIT Office:
George A. Triplett, and
Richard K. Wind, Representatives,
203 Medical Arts Bldg.
13710-14 Woodward Ave.
Telephone Townsend 8-7980

While he was with UAW-CIO, Mr. Becker worked with prepayment plans, especially Blue Cross, which covers members of that labor group. Mr. Becker served as labor representative on the boards of trustees of Michigan Hospital Service (Blue Cross) and Michigan Medical Service (Blue Shield).

Before his present position, Mr. Becker was director of the Administrative Methods Unit, U. S. Children's Bureau, Federal Security Agency. He was also medical care administrative consultant, with particular responsibility for grants-in-aid medical care and public health programs of the Children's Bureau. He was largely responsible for the general administrative aspects of the Emergency Maternity and Infant Care Program during World War II, the largest medical care program for civilians ever undertaken by the United States government.

In Washington, D. C., he was associated with, and for several years was board president of, Group Health Association, a prepaid medical care co-operative.

His other former positions include technical adviser in medical care administration, Public Health Service, Bethesda, M.D.; consultant in administration, Bureau of Child Hygiene, New York City Department of Health; assistant director and later director of Child Health Welfare and Services to Crippled Children, Nebraska, and director of UAW-CIO Health Institute and Diagnostic Clinic, with emphasis on industrial medicine and mental hygiene services. He has written several articles on economics of hospital care.

ANNUAL COUNTY SECRETARIES—PUBLIC RELATIONS CONFERENCE

Sunday, January 27, 1952
Book-Cadillac Hotel, Detroit, Michigan

Program

Morning—10:00 a.m. to 12:00 (Crystal Ballroom)

Chairman: ARCH WALLS, M.D., Detroit, Chairman of MSMS Public Relations Committee

FORMULA FOR FREEDOM

1. "The Formula Works"—a documentary radio broadcast
Commentator: JOSEPH R. HAINLINE, Detroit, WJR News Reporter.
2. "Why Formula is Valuable to Medicine"
WILLIAM BROMME, M.D., Detroit, Chairman MSMS Council
3. "How Formula is Applied"—a panel
Press: C. L. WESTON, M.D., Owosso; Radio: C. A. PAYNE, M.D., Grand Rapids; Cinema: R. F. SALOT, M.D., Mt. Clemens; Publications: K. H. JOHNSON, M.D., Lansing; Speakers: G. E. MILLARD, M.D., Detroit; Education: H. J. MEIER, M.D., Coldwater. Quiz Master: J. E. LIVESAY, M.D., Flint.

Noon-Day Dinner—12:15 p.m. (Italian Garden)

Chairman: OTTO O. BECK, M.D., Birmingham, MSMS President

Speaker: "Pretzels Sell Beer," F. A. KAISER, Detroit, Vice President, Detroit Michigan Stove Company

Afternoon—2:00 to 4:00 p.m. (Crystal Ballroom)

Chairman: E. H. FENTON, M.D., Detroit, Chairman of County Secretaries

1. "The Beaumont Memorial"
OTTO O. BECK, M.D., Birmingham, MSMS President
2. "What You Should Know About the Medical Practice Act and the Basic Science Act"
J. JOSEPH HERBERT, LL.B., Manistique, MSMS Legal Counsel
3. "MSMS Techniques—and Why"
L. FERNALD FOSTER, M.D., Bay City, MSMS Secretary
Question-and-Answer Period.

North Shore Health Resort

on the shores of Lake Michigan

WINNETKA, ILLINOIS

NERVOUS and MENTAL DISORDERS ALCOHOLISM and DRUG ADDICTION

Modern Methods of Treatment

MODERATE RATES

Established 1901

Licensed by State of Illinois

Fully Approved by the

American College of Surgeons

SAMUEL LIEBMAN, M.S., M.D.

Medical Director

225 Sheridan Road

Winnetka 6-0221

MOUNT CARMEL MERCY HOSPITAL CLINIC DAY

Wednesday, January 30, 1952

Program (At Hospital, 6071 West Outer Drive, Detroit)

Morning Session—9:00 A.M. to 12:00 M.

ALEXANDER BRUNSCHWIG, M.D., Professor of Surgery, Cornell University.

Subject: PRESENT STATUS OF EXENTERATION OPERATIONS FOR ADVANCED PELVIC CANCER.

HOWARD F. ROOT, M.D., Associate Professor of Medicine, Harvard University.

Subject: CONTROL OF DIABETES BY INSULIN AND DIET IN THE PREVENTION OF DEGENERATIVE COMPLICATIONS.

GEORGE H. GARDNER, M.D., Professor of Obstetrics and Gynecology, Northwestern University.

Subject: A GYNECOLOGIST EVALUATES LOW BACKACHE.

WILEY D. FORBUS, M.D., Professor of Pathology, Duke University.

Subject: (Topic to be given).

Luncheon—12:30 P.M.

Afternoon Session—2:00 P. M. to 4:15 P.M.

CUSHMAN D. HAAGENSEN, M.D., Associate Professor of Clinical Surgery, Columbia University.

Subject: THERAPY OF BREAST CARCINOMA.

DAVID T. SMITH, M.D., Professor of Medicine and Bacteriology, Duke University.

Subject: CHRONIC BACTERIAL AND FUSOSPIROCHETAL INFECTIONS OF THE LUNG.

ALTON OCHSNER, M.D., Professor of Surgery, Tulane University.

Subject: THE EARLY DIAGNOSIS AND TREATMENT OF GASTRIC CARCINOMA.

Banquet—7:30 P.M., Statler Hotel

EFFECTIVE GERMICIDE

(SODIUM HYPOCHLORITE)

Roman Cleanser—active ingredient 5.25% sodium hypochlorite. Effective for disinfecting linens, dishes, glasses; also bed pans, utensils. See label.

Quarts, Half-Gallons, Gallons,
Sold at Grocers.



All important laboratory examinations; including—

Tissue Diagnosis
The Wassermann and Kahn Tests
Blood Chemistry
Bacteriology and Clinical Pathology
Basal Metabolism
Aschheim-Zondek Pregnancy Test
Intravenous Therapy with rest rooms for Patients
Electrocardiograms

Central Laboratory

Oliver W. Lohr, M.D., Director

537 Millard St.
Saginaw

Phone, Dial 2-4100—2-4109

The pathologist in direction is recognized
by the Council on Medical Education
and Hospitals of the A. M. A.

THE DOCTOR'S LIBRARY

Acknowledgment of all books received will be made in this column, and this will be deemed by us as full compensation to those sending them. A selection will be made for review, as expedient.

REVIEW OF PHYSICAL CHEMISTRY. By Harold A. Harper, Ph.D., Professor of Biology (Biochemistry), University of San Francisco Lecturer in Surgery, University of California School of Medicine, San Francisco Biochemist Consultant to Metabolic Research Facility, U. S. Naval Hospital, Oakland Director, Biochemistry Laboratory, St. Mary's Hospital, San Francisco. Third edition. Palo Alto, Calif.: University Medical Publishers, 1951. Price \$3.50.

This loose-leaf book lives up to its title. It is up to the minute and concise, and while the author states that it is intended as a supplement for a larger text, it does very well independently. The chapters on the adrenal cortex and on water balance are excellent. While it is recommended to all physicians, it would be of particular value to the internist or surgeon preparing for a specialty-board examination. A.A.H.

DIABETES CONTROL. By Edward L. Bortz, M.D., Chief of Medical Service B, The Lankenau Hospital; Associate Professor of Medicine, Graduate School of Medicine, University of Pennsylvania, Philadelphia. Former President of the American Medical Association. Illustrated. Philadelphia: Lea & Febiger, 1951. Price \$3.50.

Dr. Bortz has written this book especially for the patient. The profession is now offering to the patient all the information possible in the fight to control diabetes, and the outlook for the patient is the brightest ever. Several books are in the field giving specific instructions to the patient, and outlining reasons and methods to attain health. Twenty-four chapters take up detection, control, what is diabetes?, causes; symptoms, basis of treatment, the diabetic child, pregnancy, and many others such as surgery, life insurance, long life. The literary style is pleasant. The book should be in the hands of the family of every diabetic.

MASTER YOUR MIND. By Samuel Kahn, M.D., Ph.D. New York: Rockport Press, Inc., 1951.

The author, in his introduction, states "This book connotes happiness. It is written for young and old. It provides avenues of approach that are intended to remove barriers that obtrude on the journey to a joyful state of mind." The preface is ten pages and develops the tenet, "As one studies, so will he think and act." There are sixteen chapters on: How to study and think; difficulties in studying; advice on how to study; et cetera. Other chapters include: How to use a library; important reference materials in libraries; how to take good notes; attention; remembering and methods used in remembering. A chapter on failure and success is followed by one on important questions for your study. There is an extensive

bibliography. This is a very interesting and challenging book.

ALLERGY IN RELATION TO PEDIATRICS. By Bret Ratner, M.D., Professor of Clinical Pediatrics (Allergy) and Associate Professor of Immunology, New York Medical College; Attending Pediatrician, Flower and Fifth Ave. Hospitals; Director of Pediatrics, Sea View Hospital. Panel Discussion: T. N. Harris, M.D.; Ben F. Feingold, M.D.; M. Murray Peshkin, M.D.; Lewis Webb Hill, M.D.; Wm. P. Buffum, M.D.; Edward Scott O'Keefe, M.D.; W. Ambrose McGee, M.D.; Susan C. Dees, M.D.; A. J. Horesh, M.D.; Dorothy W. Baruch, Ph.D.; Hyman Miller, M.D.; Richard H. Todd, M.D.; Wm. C. Deamer, M.D.; James C. Overall, M.D.; Albert V. Stoesser, M.D., Ph.D., and Jerome Glaser, M.D. An official publication of The American College of Allergists. Saint Paul: Bruce Publishing Co., 1951. Price \$3.75. This book edited by Doctor Ratner, contains articles

by some sixteen Pediatric Allergists in addition to the opening chapter by the editor on "Genesis of Allergy."

The compilation covers the subject reasonably adequately, probably authoritatively, and should prove of value to the practitioner. Diagnostic methods are well discussed. With some exceptions treatment is not as well handled as the more theoretical phases of the studies.

One is inclined to find fault with the realism, if not the truth, of the following statement by Doctor Ratner in the introduction: "Specialized training does give the Pediatric Allergist an insight that enables him to probe more deeply into the dual aspects of pediatrics and allergy which should enable him to treat more adequately the highly complicated cases which resist usual diagnostic and therapeutic measures." The relative scarcity of practitioners of that hybrid specialty, Pediatric Allergy, reduces the above statement to the realm of impractical observation. Within the lifetime of most of us the limitations imposed by geography will make it necessary that even complicated cases be treated by a Pediatrician, or an Allergist, or a General Practitioner. Perhaps with the aid of this book he may be able to avoid making too much of a mess of the job.

H.F.B.

SURGICAL TREATMENT OF THE MOTOR-SKELETAL SYSTEM. Supervising Editor-Frederic W. Bancroft, A.B., M.D., F.A.C.S. Professor of Clinical Surgery, New York Medical College; Director of Surgery Emeritus, Beth David Hospital, New York, N. Y.; Director of Surgery, Hasbrouck Heights Hospital, Hasbrouck Heights, N. J.; Senior Consulting Surgeon, Bronx Veterans Hospital; Consulting Surgeon, New York Infirmary for Women and Children, Lincoln and Harlem Hospitals, New York, N. Y., North County Community Hospital, Glen Cove, N. Y., Paterson General Hospital, Paterson, N. J., and Stamford Hospital, Stamford, Conn. Associate Editor, Henry C. Marble, A.B., M.D., F.A.C.S. Consultant, formerly Chief of Fracture Service, Massachusetts General Hospital; Consulting Surgeon, Veterans Administration Cushing and Bedford Hospitals; Surgeon, Chelsea Memorial Hospital, Chelsea; Consulting Surgeon, Faulkner Hospital; Instructor in Surgery, Harvard Medical School, courses for graduates. Part One—Deformities, Paralytic Disorders, Muscles, Tendons, Bursae, New Growths, Diseases of Bones and Joints, Amputations.

DECEMBER, 1951

Say you saw it in the Journal of the Michigan State Medical Society

ARTIFICIAL LIMBS PLASTIC ARMS

Braces • Surgical Garments • Trusses



Precision made artificial limbs manufactured by us have made Rowley users capable of doing most everything the normal person can do.

We manufacture and fit the new above-knee suction socket limb, which requires no pelvic belt or any type of suspension.

38 Years in Business

E. H. ROWLEY CO., Inc.

TO. 8-6424 TO 8-1038
11330 Woodward Ave.—Detroit 2

LANSING BRANCH
1129 N. WASHINGTON—PHONE 9-5217

TOLEDO BRANCH
1703 DORR ST.—PHONE MAIN 8819

ACCIDENT • HOSPITAL • SICKNESS

INSURANCE

FOR PHYSICIANS, SURGEONS, DENTISTS EXCLUSIVELY



\$5,000.00 accidental death	\$8.00
\$25.00 weekly indemnity, accident and sickness	Quarterly
\$10,000.00 accidental death	\$16.00
\$50.00 weekly indemnity, accident and sickness	Quarterly
\$15,000.00 accidental death	\$24.00
\$75.00 weekly indemnity, accident and sickness	Quarterly
\$20,000.00 accidental death	\$32.00
\$100.00 weekly indemnity, accident and sickness	Quarterly

Cost has never exceeded amounts shown.

Also Hospital Policies for Members, Wives and Children at Small Additional Cost

85c out of each \$1.00 gross income used for members' benefits

\$4,000,000.00 INVESTED ASSETS **\$17,000,000.00 PAID FOR CLAIMS**

\$200,000.00 deposited with State of Nebraska for protection of our members. Disability need not be incurred in line of duty—benefits from the beginning day of disability

PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION

49 years under the same management
400 First National Bank Bldg., Omaha 2, Nebr.

THE DOCTOR'S LIBRARY

With 519 Illustrations and one color plate. Second Edition. Philadelphia: Two Parts, J. B. Lippincott Co., 1951. Price \$24.00.

This new second edition published in two volumes is a thorough revision. All procedures, obsolescent or historical, have been eliminated. One entirely new unit on The Physiology of Bone Repair has been added. New material will be found in many of the chapters; for example, the chapter on Congenital Deformities of Lower Extremity and Surgical Treatment of Scoliosis.

All forty-six contributors are experts in their respective fields and with the assistance of the editors have made their material concise and readable. The material has been divided into two parts according to the origin of the lesion, with those due to injury in Volume I and those due to other causes in Volume II. The general surgeon, the orthopedic surgeon, and all physicians who treat trauma will find this work an excellent one.

—J. W. H.

HANDBOOK OF MEDICAL MANAGEMENT. By Milton Chatton, A.B., M.D., Instructor in Medicine, University of California Medical School, San Francisco; Sheldon Margen, A.B., M.D., Clinical Instructor in Medicine, and Henry D. Brainerd, A.B., M.D., Assistant Clinical Professor of Medicine and Pediatrics, University of California School of Medicine, Assistant Clinical Professor of Pediatrics, Stanford University School of Medicine; Physician in charge Isolation Division, San Francisco Hospital. Second Edition. Palo Alto, California: University Medical Publishers, 1951. Price \$3.00.

This is truly a pocket size book, 4 by 7 inches, and an inch thick. There are four general consideration chapters, the usual considerations of diagnosis, management, fluids, electrolytic therapy, parenteral feeding, diet and nutrition, then eighteen chapters devoted to different groups of disease and conditions. The disease entities are given their code number. The book is indexed. The considerations are necessarily brief, but sufficiently clear. There are over five hundred pages.

THE PUBLIC HEALTH NURSE AND HER PATIENT. By Ruth Gilbert, R.N., Co-ordinator, Course for Mental Hygiene Consultants and Assistant Professor of Nursing Education Teachers College, Columbia University. Published for The Commonwealth Fund. Cambridge, Mass.: Harvard University Press, 1951. Price \$3.75.

Eleven years have elapsed since the first edition of this book was issued. This present book is an elaborate text for the nurse, whether public health or not. It recognizes the vast importance of mental health, and much of the text is so directed. A chapter is devoted to teaching health—over ninety pages, and it involves the relationship between the nurse and the patient, working with the individual patient, and working with groups. The next chapter deals with the maternity patient. The chapter regarding the child in the family takes up growth, maturity and learning. Training situations and behavior problems are dealt with. A chapter is given to nursing the sick patient. The final chapter, justifying the title of public health nurse, is devoted to relationship with co-workers, interagency and interprofessional affairs. The book is well written, beautifully printed, and well worth the attention, we would think, of every nurse.

1456

FROM A DOCTOR'S HEART. By Eugene F. Snyder, M.D. With a Foreword by Paul Dudley White, M.D. New York: Philosophical Library. Price \$3.75.

We have been pleased to read this little book. It is the story of a doctor who speaks from personal experience in learning and teaching others to overcome the handicap of a "heart attack." The book is illustrated by cartoons made by the doctor, but improved by a cartoonist. The author stresses the condition of heart disease, its insidious attack, and the small amount of research. He quotes the report of Dr. Henry Simms of Columbia University to the Senate Subcommittee on Wartime Health and Education, December, 1944: "In 1940, \$2.18 was spent in America on research for each cancer death, \$4.00 for each death from infectious diseases (other than infantile paralysis), \$525 for each infantile paralysis death, and 17c for each death due to diseases of the heart and arteries."

The book is cleverly written and interesting for both the doctor and the patient.

MUST READING

A vivid, readable story of doctors in Michigan back in the wilderness days who fought Indians as well as disease. Order today, on approval

Fanny J. Anderson's

DOCTORS UNDER THREE FLAGS

\$3.50

DETROIT TEXTBOOK STORES, INC.

143 E. Elizabeth St.

Detroit 1, Michigan

(Downtown in Red Cross Bldg.)

WOodward 5 6914

Classified Advertising

\$2.50 per insertion of fifty words or less, with an additional five cents per word in excess of fifty

WANTED: Pediatrician and Ear, Nose and Throat men to join our present staff of Internist, General Surgeon, Obstetrician and Gynecologist, Radiologist and Dentist. Location ideal. Opportunities unlimited. Woods Medical Center, 19635 Mack Avenue, Grosse Pointe Woods 30, Michigan.

FOR SALE: A well-established practice available for M.D. in Michigan's fastest growing community. Exquisite living quarters in connection with extremely modern office on main highway adjacent to Johnson's Rustic Resort. Only one other M.D. in entire county. Must sell because of serious illness. A beautiful practice in beautiful country. Contact Earl M. Johnson, Johnson's Rustic Resort, Houghton Lake, Michigan.

WANTED: General practitioner to take over free of charge, practice netting \$1,200 to \$1,500 per month. Investment desirable but not necessary. Must have Michigan license. Write Box 12, Michigan State Medical Society, 606 Townsend Street, Lansing 15, Michigan.

JMSMS

Say you saw it in the Journal of the Michigan State Medical Society

Index to Volume 50

AUTHOR'S INDEX

Ahronheim, J. H., 288
 Altemeier, W. A., 597
 Atlas, Reynold A., 294

Balberor, Harry, 1248
 Basinski, Daniel H., 1048
 Beck, Claude S., 149
 Belnap, W. Dean, 149
 Benson, Clifford D., 289, 1131
 Berry, Robert E. L., 275
 Black, Henry C., 745, 894
 Blodgett, William H., 1008
 Bohr, David F., 1419
 Bortz, Edward L., 585
 Boyle, Albert J., 1370
 Breakey, Robert S., 1147
 Brines, Osborne A., 262
 Brown, Earle O., Jr., 1255
 Brown, Harold Whaley, 509
 Brunsting, Louis A., 48
 Burnett, Lawrence F., 33
 Butler, William J., 62

Chambers, Myrton S., 1402
 Chandler, Douglas, 1370
 Chase, John D., 1026
 Cole, James E., 267
 Cole, Warren H., 481
 Corrigan, K. E., 257, 887
 Cosgrove, S. A., 33, 37

Dale, Mark, 1035
 Dean, Carleton, 1358
 Delaney, J. R., 1236
 De Vel, Leon, 1410
 Dodrill, F. D., 1424
 Donald, Douglas, 1353
 Donelson, K., 61
 Drill, Victor A., 721
 Duff, Ivan F., 1019

Ensign, Dwight C., 1038
 Ewald, Henry T., 1005

Fagin, I. Donald, 57, 1248
 Figley, M. M., 1378
 Foster, L. Fernald, 179
 Freund, Hugo A., 1048, 1233
 Friedlaender, Alex S., 54
 Friedlaender, Sidney, 54

Getting, Vlado A., 282, 726
 Gibbs, Frederic A., 145
 Giles, John L., 1145
 Gordon, John E., 1239
 Gotz, Alexander, 880
 Grebe, John J., 271
 Gregory, John E., 391

Haake, Alfred P., 1427
 Hammer, J. M., 887
 Hayden, H. S., 887
 Hays, Harry W., 721
 Heller, John R., Jr., 384
 Heustis, Albert E., 404
 Hill, Lee Forrest, 153
 Himler, Leonard E., 278
 Hodges, F. J., 1378
 Holly, Leland E., 269
 Holt, John F., 615

DECEMBER, 1951

Ireland, H. D., 619
 Isbister, J. L., 1251
 Iseri, Lloyd T., 1370

Johnson, Raymond E., 1402
 Johnston, Franklin, 1354

Kamperman, George, 865
 Kasper, J. A., 264
 Kaump, D. H., 264
 Kempton, Rockwell M., 743
 Kenfield, W. J., 1419
 Kennedy, R. B., 1053
 Kiefer, Everett D., 1258
 Kirk, Thomas R., 739
 Kirschbaum, Harry, 742
 Kitto, H. J., 1419
 Klemme, Roland M., 1149
 Kohlerman, Nicholas J., 740
 Kozonis, Michael C., 1402
 Krynicki, F. X., 1045
 Kullman, Harold J., 1133

Levey, Stanley, 1028
 Levitt, Nathan, 606
 Lichter, M. L., 289
 Lightbody, J. J., 1006, 1015
 Lipkin, Ezra, 1022
 Lowrey, George H., 615
 Lyons, Robert T., 1416

McCallister, John W., 398
 McDonald, John R., 377
 McGraw, Arthur B., 267
 McInerney, Thomas A., 501
 McKean, G. Thomas, 1137
 McKelvey, John L., 736
 McKhann, Charles R., 149
 McNealy, Raymond W., 398
 Mahood, J. J., 1236
 Mallin, Lloyd, 742
 Martin, Gordon M., 730
 Mattes, Max W., 57
 Miller, Macon, 253
 Miller, Norman F., 45
 Moehlig, Robert C., 174
 Morgan, Donald, 865
 Morris, Carlton, 1051
 Murphy, Alma, 1031
 Musselman, Merle M., 275
 Myers, Gordon B., 1370

Nesbit, R. M., 1244
 Netherton, E. W., 495
 Newman, Max Karl, 1031

Paterson, R. R., 1419
 Paukstis, C. A., 1238
 Pearson, I. A., 887
 Peterman, Earl A., 1010
 Prather, George C., 41
 Price, Alvin E., 1015
 Priddle, Harold D., 740

Randolph, Theron G., 487
 Raper, F. P., 1244
 Rector, Frank L., 388
 Reveno, William S., 1015
 Robb, James Milton, 1125
 Robertson, P. C., 1251
 Robinson, William D., 1019
 Ruedemann, A. D., 1143

INDEX TO VOLUME 50

Ryde, Robert E., 501
 Schmitt, Phillip E., 1133
 Selby, C. D., 402
 Seltzer, Holbrooke S., 59
 Sheinfeld, Sarah, 1028
 Shumacker, Harris B., Jr., 168
 Sie, Hsien-gieh, 1048
 Sigler, John W., 1038
 Skaggs, Allison E., 745, 894
 Smith, Betsy P., 1048
 Smith, Clement A., 872
 Smith, Donald S., 1416
 Smith, F. Janney, 1388
 Stamell, Benjamin B., 875
 Stanley, A. L., 1251
 Steinbach, Albert J., 174
 Stern, A. M., 1378
 Stringer, C. J., 1251
 Strom, Arthur W., 407
 Swartz, Frederick C., 1128

 Thirlby, R. L., 1244
 Thompson, Jack W., 504
 Traut, Herbert F., 611

 Ungerleider, Harry E., 1360

 Vonder Heide, Elmore C., 1015

 Waggoner, Raymond W., 278
 White, Priscilla, 602, 883
 Wilkinson, John M., 1026
 Wilner, Warren K., Jr., 1141
 Wilson, J. L., 1378
 Wolfson, William Q., 1019
 Woolner, Lewis B., 377

 Yonkman, Fredrick F., 160, 590

CONTRIBUTED PAPERS

A

Abdomen, upper, Surgical lesions of the, in the newborn and infant. Clifford D. Benson, M.D., 1131
 Accident prevention through epidemiologic analysis. John E. Gordon, M.D., 1239
 Acrodynia, Dimercaprol in the treatment of. Thomas R. Kirk, M.D., 739
 ACTH and cortisone in the treatment of the shoulder-hand syndrome. John W. Sigler, M.D., and Dwight C. Ensign, M.D., 1038
 Adrenal cortex, Role of the, in certain peritoneal, pleural and pericardial effusions. Robert C. Moehlig, M.D., and Albert J. Steinbach, M.D., 174
 Adrenergic blockade, Clinical application of, in sympathetic predominance. Fredrick F. Yonkman, M.D., 590
 Adrenocorticotrophic hormone (ACTH), Sustained pituitary. Earl A. Peterman, M.D., 1010
 Allergic disease, Pharmacological aspects of. Victor A. Drill, Ph.D., M.D., and Harry W. Hays, Ph.D., 721
 Allergic myalgia. Theron G. Randolph, M.D., 487
 Americanism and moral integrity. Roland M. Klemme, M.D., 1149
 Anesthesia in chest surgery. Warren K. Wilner, Jr., M.D., 1141
 Aneurysms and arteriovenous fistulas. Harris B. Shumacker, Jr., M.D., 168

1460

Angiocardiographic observations in some correctible types of congenital cardiovascular disease. M. M. Figley, M.D., A. M. Stern, M.D., J. L. Wilson, M.D., and F. J. Hodges, M.D., 1378
 Angiocardiography in the differential diagnosis of mediastinal psuedo-tumor. Max W. Mattes, M.D., and I. Donald Fagin, M.D., 57
 Antibiotic agents, newer, Clinical use of the, in surgery. W. A. Altemeier, M.D., 597
 Antibiotics and radioactivity compared to iodine in vitro, Sensitivity of fungi to. J. M. Hammer, M.D., I. A. Pearson, B.A., K. E. Corrigan, Ph.D., and H. S. Hayden, Ph.D., 887
 Aorta, Operation for coarctation of, in older patients. F. D. Dodrill, M.D., 1424
 Application of venereal disease control in the general health program of the Michigan State Medical Society. Robert S. Breakey, M.D., 1147
 Arteriosclerosis, human, Blood lipids and. Harry E. Ungerleider, M.D., 1360
 Arteriovenous fistulas, Aneurysms and. Harris B. Shumacker, Jr., M.D., 168
 Arthritis, Chronic: Physical medicine and rehabilitation. Max Karl Newman, M.D., F.A.C.P., and Alma Murphy, B.S., Ph.D., 1031
 Arthritis of the spine—The impostor. William H. Blodgett, M.D., 1008
 Arthritis research in Michigan—II. J. J. Lightbody, M.D., 1006
 Arthritis research in Michigan, Financing. Henry T. Ewald, LL.D., 1005
 Arthritis, rheumatoid, Cortisone in. Alvin E. Price, M.D., James J. Lightbody, M.D., William S. Reveno, M.D., and Elmore C. Vonder Heide, M.D., 1015
 Arthritis, rheumatoid, Levels of plasma betaglucuronidase in. Daniel H. Basinski, Ph.D., Betsy P. Smith, Ph.D., Hsien-gieh Sie, Ph.D., and Hugo A. Freund, M.D., 1048
 Atomic bomb, Pathologic changes produced by the radiation effects of the. Osborne A. Brines, M.D., 262
 Atomic bomb! Take cover! Major Reynold A. Atlas, 294
 Atomic diseases, The doctor's responsibility in. Vlado A. Getting, M.D., 282
 Atomic energy, Development, use and effects of. Macon Miller, M.S., 253
 Atomic explosion, The management of patients burned by. Merle M. Musselman, M.D., and Robert E. L. Berry, M.D., 275
 Automobile workers, Silicosis encountered among. I. Donald Fagin, M.D., and Harry Balberor, M.D., 1248

B

Behavior problems, Prevention of, in pediatric practice. Lee Forrest Hill, M.D., 153
 Beta-glucuronidase, plasma, Levels of, in rheumatoid arthritis. Daniel H. Basinski, Ph.D., Betsy P. Smith, Ph.D., Hsien-gieh Sie, Ph.D., and Hugo A. Freund, M.D., 1048
 Bile duct, the common, Ostruction of, by stones. Warren H. Cole, M.D., 481
 Birth injury, cerebral, Late effects of. Charles F. McKhann, M.D., W. Dean Belnap, M.D., and Claude S. Beck, M.D., 149
 Blood lipids and human arteriosclerosis. Harry E. Ungerleider, M.D., 1360

JMSMS

INDEX TO VOLUME 50

- Blood procurement in time of disaster. D. H. Kaump, M.D., and J. A. Kasper, M.D., 264
- Blood typing program, The mass, of Jackson, Michigan. J. H. Ahronheim, M.D., 288

C

- Calcinosis. Hugo A. Freund, A.B., M.D., 1233
- Cancer case finding procedures, Physical examinations in industry as. C. D. Selby, M.D., 402
- Cancer control in Michigan. Albert E. Heustis, M.D., 404
- "Cancer, early," The clinical importance of. John R. McDonald, M.D., and Lewis B. Woolner, M.D., 377
- Cancer detection program, practical, What is a? Frank L. Rector, M.D., 388
- Cancer, human, Virus as a cause of. John E. Gregory, M.D., 391
- Cancer program, Michigan, The register in the. C. J. Poppen, M.D., 406
- Cancer research, Progress in. John R. Heller, Jr., 384
- Cardiovascular disease, congenital, Angiocardiographic observations in some correctible types of. M. M. Figley, M.D., A. M. Stern, M.D., J. L. Wilson, M.D., and F. J. Hodges, M.D., 1378
- Cerebral birth injury, Late effects of. Charles F. McKhann, M.D., W. Dean Belnap, M.D., and Claude S. Beck, M.D., 149
- Chest surgery, Anesthesia in. Warren K. Wilner, Jr., M.D., 1141
- Child, The emotionally healthy. Benjamin B. Stamell, M.D., 875
- Chondroitin sulfate, Studies on the removal of protein from. Stanley Levey, Ph.D., and Sarah Sheinfeld, M.T., 1028
- Chronic ulcerative colitis in veterans. Harold J. Kullman, M.D., F.A.C.P., and Phillip E. Schmitt, M.D., 1133
- Civilian defense, Psychiatric aspects of. Raymond W. Waggoner, M.D., Sc.D., and Leonard E. Himler, A.B., M.D., 278
- Clinical application of adrenergic blockade in sympathetic predominance. Fredrick F. Yonkman, M.D., 590
- Clinical evaluation of polythionates in dermatology. J. R. Delaney, M.D., and J. J. Mahood, M.D., 1236
- Clinical importance of "early cancer," The. John R. McDonald, M.D., and Lewis B. Woolner, M.D., 377
- Clinical significance of hemoptysis. Nathan Levitt, M.D., 606
- Clinical use of the newer antibiotic agents in surgery. W. A. Altemeier, M.D., 597
- Colitis, Chronic ulcerative, in veterans. Harold J. Kullman, M.D., F.A.C.P., and Phillip E. Schmitt, M.D., 1133
- Common geriatric dermatoses. E. W. Netherton, M.D., 495
- Community service projects, Education and. Carleton Dean, M.D., 1358
- Complication of coronary occlusive disease. Myrton S. Chambers, M.D., Raymond E. Johnson, M.D., and Michael C. Kozonis, M.D., 1402
- Complications of diabetes. Priscilla White, M.D., 602
- Conceptive ability, Restoration of, following surgical sterilization. C. A. Paukstis, M.D., 1238

- Congenital paralysis of the inferior oblique. Harold Whaley Brown, M.D., 509
- Coronary occlusive disease, Complication of. Myrton S. Chambers, M.D., Raymond E. Johnson, M.D., and Michael C. Kozonis, M.D., 1402
- Cortisone, ACTH and, in the treatment of the shoulder-hand syndrome. John W. Sigler, M.D., and Dwight C. Ensign, M.D., 1038
- Cortisone and gold, The treatment of Still's disease with. John D. Chase and John M. Wilkinson, M.D., 1026
- Cortisone in rheumatoid arthritis. Alvin E. Price, M.D., James J. Lightbody, M.D., William S. Reveno, M.D., and Elmore C. Vonder Heide, M.D., 1015
- Cortisone, Oral. Mark Dale, M.D., 1035
- Cough reflex, Dilaudid suppositories for the suppression of the. K. Donelson, M.D., 61
- Cysts and fistulas of the mouth, head and neck. James Milton Robb, M.D., 1125

D

- Decontamination. Leland E. Holly, M.D., 269
- Defense activities, medical, of the Wayne Medical Society, Outline of. C. D. Benson, M.D., and M. L. Lichter, M.D., 289
- Defense, civilian, Psychiatric aspects of. Raymond W. Waggoner, M.D., Sc.D., and Leonard E. Himler, A.B., M.D., 278
- Dermatology, Clinical evaluation of polythionates in. J. R. Delaney, M.D., and J. J. Mahood, M.D., 1236
- Dermatoses, Common geriatric. E. W. Netherton, M.D., 495
- Dermatoses, Eczematous, Treatment of. Alex S. Friedlaender, M.D., and Sidney Friedlaender, M.D., 54
- Development, use and effects of atomic energy. Macon Miller, M.S., 253
- Diabetes, Complications of. Priscilla White, M.D., 602
- Diagnosis and treatment of chronic diseases of the small intestine, The. Everett D. Kiefer, M.D., 1258
- Diagnosis and treatment of congenital urethral valves. R. M. Nesbit, R. L. Thirlby, and F. P. Raper, 1244
- Diagnosis of pheochromocytoma. Lloyd T. Iseri, M.D., Douglas Chandler, M.D., Gordon B. Myers, M.D., and Albert J. Boyle, M.D., 1370
- Diarrhea, Epidemic, of the newborn. Rockwell M. Kempton, M.D., 743
- Dicumarol, Rectal administration of, in a case of mesenteric venous thrombosis. Holbrooke S. Seltzer, M.D., 59
- Dilaudid suppositories for the suppression of the cough reflex. K. Donelson, M.D., 61
- Dimercaprol in the treatment of acrodynia. Thomas R. Kirk, M.D., 739
- Disaster, Blood procurement in time of. D. H. Kaump, M.D., and J. A. Kasper, M.D., 264
- Doctors and dollars. Henry C. Black, and Allison E. Skaggs, 745, 894
- Doctor's responsibility in atomic diseases, The. Vlado A. Getting, M.D., 282
- Dystocia, mid-pelvic, Problems of. John L. McKelvey, M.D., C.M., 736

E

- Eczematous dermatoses, Treatment of. Alex S. Friedlaender, M.D., and Sidney Friedlaender, M.D., 54

INDEX TO VOLUME 50

Education and community service projects. Carleton Dean, M.D., 1358

Effect of pregnancy on the urinary tract. George C. Prather, M.D., F.A.C.S., 41

Elderly patient, The. Edward L. Bortz, M.D., 585

Emergency supplies, Survival shelters, and first aid kits. John J. Grebe, Ph.D., 271

Emotionally healthy child, The. Benjamin B. Stamell, M.D., 875

Endometriosis, A review of. Jack W. Thompson, M.D., 504

Epidemic diarrhea of the newborn. Rockwell M. Kemp-ton, M.D., 743

Epidemiologic analysis, Accident prevention through. John E. Gordon, M.D., 1239

Epilepsy, The treatment of. Frederic A. Gibbs, M.D., 145

Errors and pitfalls in the diagnosis and treatment of rheumatic diseases. Ezra Lipkin, M.D., 1022

Etiology of pain in degenerative joint disease, The. F. X. Krynicki, M.D., 1045

Evacuation, Medical problems of. Arthur B. McGraw, M.D., and James E. Cole, M.D., 267

Exophthalmos. A. D. Ruedemann, M.D., 1143

F

Financing arthritis research in Michigan. Henry T. Ewald, LL.D., 1005

First aid kits, Survival shelters, emergency supplies, and. John J. Grebe, Ph.D., 271

Fistulas, arteriovenous, Aneurysms and. Harris B. Shumacker, Jr., M.D., 168

Fistulas, Cysts and, of the mouth, head and neck. James Milton Robb, M.D., 1125

Fungi, Sensitivity of, to antibiotics and radioactivity compared to iodine in vitro. J. M. Hammer, M.D., I. A. Pearson, B.A., K. E. Corrigan, Ph.D., and H. S. Hayden, Ph.D., 887

G

Geriatric dermatoses, Common. E. W. Netherton, M.D., 495

Geriatric philosophy, A. Frederick C. Swartz, M.D., 1128

Government and you, Your. Carlton Morris, 1051

H

Head and neck, Cysts and fistulas of the mouth. James Milton Robb, M.D., 1125

Heart research in Michigan. Franklin Johnston, M.D., 1354

Hearts, New hope for. Douglas Donald, M.D., 1353

Hematoma of the vulva during labor. Harry Kirschbaum, M.D., and Lloyd Mallin, M.D., 742

Hemoptysis, Clinical significance of. Nathan Levitt, M.D., 606

Hillsdale plan for tumor detection, The. Arthur W. Strom, M.D., 407

Histoplasmin and old tuberculin reactors in Kent County, Michigan. H. D. Ireland, M.D., 619

1462

Hypertension, Neurogenic. Fredrick F. Yonkman, M.D., 160

Hypertension, Renal and neurogenic factors in. W. J. Kenfield, David F. Bohr, R. R. Paterson and H. J. Kitto, 1419

I

Importance of physical medicine and rehabilitation for the industrially injured. Gordon M. Martin, M.D., 730

Industrially injured, Importance of physical medicine and rehabilitation for the. Gordon M. Martin, M.D., 730

Industry, Physical examinations in, as cancer case finding procedures. C. D. Selby, M.D., 402

Infant, newborn and, Surgical lesions of the upper abdomen in the. Clifford D. Benson, M.D., 1131

Infant, premature, Management of the. Clement A. Smith, M.D., 872

Infarction, Myocardial. F. Janney Smith, M.D., 1388

Inferior oblique, Congenital paralysis of the. Harold Whaley Brown, M.D., 509

Instrumentation. K. E. Corrigan, Ph.D., 257

Insulin, NHP. Priscilla White, M.D., 883

Intestine, small, The diagnosis and treatment of chronic diseases of the. Everett D. Kiefer, M.D., 1258

Iodized table salt, Why the necessity for? John L. Giles, C.E., 1145

J

Joint disease, degenerative, The etiology of pain in. F. X. Krynicki, M.D., 1045

K

Kala-azar. Thomas A. McInerney, M.D., and Robert E. Ryde, M.D., 501

Know yourself. Alfred P. Haake, Ph.D., 1427

L

Labor, Pain relief during. Norman F. Miller, M.D., 45

Late effects of cerebral birth injury. Charles F. McKhann, M.D., W. Dean Belnap, M.D., and Claude S. Beck, M.D., 149

Levels of plasma beta-glucuronidase in rheumatoid arthritis. Daniel H. Basinski, Ph.D., Betsy P. Smith, Ph.D., Hsien-gieh Sie, Ph.D., and Hugo A. Freund, M.D., 1048

Lipids, Blood, and human arteriosclerosis. Harry E. Ungerleider, M.D., 1360

M

Management of migraine in office practice, The. Alexander Gotz, M.D., 880

Management of patients burned by atomic explosion, The. Merle M. Musselman, M.D., and Robert E. L. Berry, M.D., 275

JMSMS

INDEX TO VOLUME 50

- Management of the premature infant. Clement A. Smith, M.D., 872
- Marshall B. Lloyd Hospital dedicatory address. L. Fernald Foster, Ph.B., M.D., 179
- Mass blood typing program of Jackson, Michigan, The. J. H. Ahronheim, M.D., 288
- Mass screening or the multiphasic clinic. Vlado A. Getting, M.D., 726
- Maternal Deaths, Report of the Committee on, 621
- Maternal Health Committee Report, 744
- Maternal mortality case report, 1050
- Mediastinal pseudo-tumor, Angiocardiography in the differential diagnosis of. Max W. Mattes, M.D., and I. Donald Fagin, M.D., 57
- Medical defense activities in the Wayne Medical Society, Outline of. C. D. Benson, M.D., and M. L. Lichter, M.D., 289
- Medical problems of evacuation. Arthur B. McGraw, M.D., and James E. Cole, M.D., 267
- Mental institution, A tuberculosis control program in a. J. L. Isbister, M.D., P. C. Robertson, M.D., A. L. Stanley, M.D., and C. J. Stringer, M.D., 1251
- Mesenteric venous thrombosis, Rectal administration of Dicumarol in a case of. Holbrooke S. Seltzer, M.D., 59
- Migraine, The management of, in office practice. Alexander Gotz, M.D., 880
- Moral integrity, Americanism and. Roland M. Klemme, M.D., 1149
- Mouth, head and neck, Cysts and fistulas of the. James Milton Robb, M.D., 1125
- Multiphasic clinic, Mass screening or the. Vlado A. Getting, M.D., 726
- Myalgia, Allergic. Theron G. Randolph, M.D., 487
- Myocardial infarction. F. Janney Smith, M.D., 1388

N

- NHP insulin. Priscilla White, M.D., 883
- Narcoanalysis with surital sodium. Earle O. Brown, Jr., 1255
- Neck, mouth, head and, Cysts and fistulas of the. James Milton Robb, M.D., 1125
- Neurogenic hypertension. Fredrick F. Yonkman, M.D., 160
- Newborn and infant, Surgical lesions of the upper abdomen in the. Clifford D. Benson, M.D., 1131
- New hope for hearts. Douglas Donald, M.D., 1353

O

- Observations on the intravenous use of pitocin in obstetrics. Lawrence F. Burnett, M.D., and S. A. Cosgrove, M.D., 33
- Obstetrics, Observations on the intravenous use of pitocin in. Lawrence F. Burnett, M.D., and S. A. Cosgrove, M.D., F.A.C.S., 33
- Obstruction of the common bile duct by stones. Warren H. Cole, M.D., 481
- Operation for coarctation of aorta in older patients. F. D. Dodrill, M.D., 1424
- Oral cortisone. Mark Dale, M.D., 1035
- Outline of medical defense activities in the Wayne Medical Society. C. D. Benson, M.D., and M. L. Lichter, M.D., 289

- Ovarian resection—oviectomy—or absolute conservatism. Herbert F. Traut, M.D., 611
- Overcoming hemorrhagic puerperal mortality. S. A. Cosgrove, M.D., F.A.C.S., 37
- Oviectomy—Ovarian resection—or absolute conservatism. Herbert F. Traut, M.D., 611
- Oxysteroids, The probability that increasing secretion of, does not fully explain improvement in certain systemic diseases during pregnancy. William Q. Wolfson, M.D., William D. Robinson, M.D., and Ivan F. Duff, M.D., 1019

P

- Pain relief during labor. Norman F. Miller, M.D., 45
- Paralysis, Congenital, of the inferior oblique. Harold Whaley Brown, M.D., 509
- Parotid gland tumors and their surgical management. Raymond W. McNealy, MD., and John W. McCallister, M.D., 398
- Pathologic changes produced by the radiation effects of the atomic bomb. Osborne A. Brines, M.D., 262
- Peritoneal, pleural and pericardial effusions, certain, Role of the adrenal cortex in. Robert C. Moehlig, M.D., and Albert J. Steinbach, M.D., 174
- Pharmacological aspects of allergic disease. Victor A. Drill, Ph.D., M.D., and Harry W. Hays, Ph.D., 721
- Pheochromocytoma, Diagnosis of. Lloyd T. Iseri, M.D., Douglas Chandler, M.D., Gordon B. Myers, M.D., and Albert J. Boyle, M.D., 1370
- Physical examinations in industry as cancer case finding procedures. C. D. Selby, M.D., 402
- Physical medicine and rehabilitation. Max Karl Newman, M.D., F.A.C.P., and Alma Murphy, B.S., Ph.D., 1031
- Physical medicine and rehabilitation for the industrially injured, Importance of. Gordon M. Martin, M.D., 730
- Pitocin, Observations on the intravenous use of, in obstetrics. Lawrence F. Burnett, M.D., and S. A. Cosgrove, M.D., F.A.C.S., 33
- Pituitary adrenocorticotrophic hormone (ACTH), Sustained. Earl A. Peterman, M.D., 1010
- Pleural fluid. G. Thomas McKean, M.D., 1137
- Polythionates, Clinical evaluation of, in dermatology. J. R. Delaney, M.D., and J. J. Mahood, 1236
- Pregnancy, Effect of, on the urinary tract. George C. Prather, M.D., F.A.C.S., 41
- Pregnancy, Unsuspected ruptured interstitial, of eighteen calendar weeks' development. Nicholas J. Kohlerman, M.D., and Harold D. Priddle, M.D., 740
- Premature infant, Management of the. Clement A. Smith, M.D., 872
- Prematurity. George Kamperman, M.D., F.A.C.S., and Donald Morgan, M.D., F.A.C.S., 865
- Present status of the problem of syphilis, The. Louis A. Brunsting, M.D., 48
- Prevention of behavior problems in pediatric practice. Lee Forrest Hill, M.D., 153
- Probability that increasing secretion of oxysteroids does not fully explain improvement in certain systemic diseases during pregnancy, The. William Q. Wolfson, M.D., William D. Robinson, M.D., and Ivan F. Duff, M.D., 1019
- Problems of mid-pelvic dystocia. John L. McKelvey, M.D., C.M., 736
- Progress in cancer research. John R. Heller, Jr., 384

INDEX TO VOLUME 50

- Progress report on maternal mortality study, 182
- Prostatic hypertrophy, benign, A rational approach to. William J. Butler, M.D., 62
- Pseudo-tumor, mediastinal, Angiocardiography in the differential diagnosis of. Max W. Mattes, M.D., and I. Donald Fagin, M.D., 57
- Psychiatric aspects of civilian defense. Raymond W. Waggoner, M.D., Sc.D., and Leonard E. Himler, A.B., M.D., 278
- Puerperal mortality, hemorrhagic, Overcoming. S. A. Cosgrove, M.D., F.A.C.S., 37

R

- Radiation effects of the atomic bomb, Pathologic changes produced by the. Osborne A. Brines, M.D., 262
- Radioactivity, Sensitivity of fungi to antibiotics and, compared to iodine *in vitro*. J. M. Hammer, M.D., I. A. Pearson, B.A., K. E. Corrigan, Ph.D., and H. S. Hayden, Ph.D., 887
- Rational approach to benign prostatic hypertrophy, A. William J. Butler, M.D., 62
- Recognition and treatment of vitamin D resistant rickets. George H. Lowrey, M.D., and John F. Holt, M.D., 615
- Rectal administration of Dicumarol in a case of mesenteric venous thrombosis. Holbrooke S. Seltzer, M.D., 59
- Register in the Michigan cancer program, The. C. J. Poppen, M.D., 406
- Rehabilitation, Physical medicine and. Max Karl Newman, M.D., F.A.C.P., and Alma Murphy, B.S., Ph.D., 1031
- Rehabilitation, physical medicine and, for the industrially injured, Importance of. Gordon M. Martin, M.D., 730
- Renal and neurogenic factors in hypertension. W. J. Kenfield, David F. Bohr, R. R. Paterson and H. J. Kitto, 1419
- Report of the Committee on Maternal Deaths, 621
- Restoration of conceptive ability following surgical sterilization. C. A. Paukstis, M.D., 1238
- Review of endometriosis, A. Jack W. Thompson, M.D., 504
- Rheumatic diseases, Errors and pitfalls in the diagnosis and treatment of. Ezra Lipkin, M.D., 1022
- Rheumatic fever. Robert T. Lyons, M.D., and Donald S. Smith, M.D., F.A.C.P., 1416
- Rheumatic fever control program of the Michigan State Medical Society, Some observations on the. Leon De Vel, M.D., 1410
- Rheumatoid arthritis, Levels of plasma beta-glucuronidase in. Daniel H. Basinski, Ph.D., Betsy P. Smith, Ph.D., Hsien-gieh Sie, Ph.D., and Hugo A. Freund, M.D., 1048
- Rickets, vitamin D resistant, Recognition and treatment of. George H. Lowrey, M.D., and John F. Holt, M.D., 615
- Role of the adrenal cortex in certain peritoneal, pleural and pericardial effusions. Robert C. Moehlig, M.D., and Albert J. Steinbach, M.D., 174

S

- Salt, iodized table, Why the necessity for? John L. Giles, C. E., 1145

- Screening, Mass, or the multiphasic clinic. Vlado A. Getting, M.D., 726
- Sensitivity of fungi to antibiotics and radioactivity compared to iodine *in vitro*. J. M. Hammer, M.D., I. A. Pearson, B.A., K. E. Corrigan, Ph.D., and H. S. Hayden, Ph.D., 887
- Shoulder-hand syndrome, ACTH and cortisone in the treatment of the. John W. Sigler, M.D., and Dwight C. Ensign, M.D., 1038
- Silicosis encountered among automobile workers. I. Donald Fagin, M.D., and Harry Balberor, M.D., 1248
- Some observations on the rheumatic fever control program of the Michigan State Medical Society. Leon De Vel, M.D., 1410
- Spine, arthritis of the—The impostor. William H. Blodgett, M.D., 1008
- Sterilization, surgical, Restoration of conceptive ability following. C. A. Paukstis, M.D., 1238
- Still's disease, The treatment of, with cortisone and gold. John D. Chase, M.D., and John M. Wilkinson, M.D., 1026
- Studies on the removal of protein from chondroitin sulfate. Stanley Levey, Ph.D., and Sarah Sheinfeld, M.T., 1028
- Surital sodium, Narcoanalysis with. Earle O. Brown, Jr., 1255
- Surgery, chest, Anesthesia in. Warren K. Wilner, Jr., M.D., 1141
- Surgery, Clinical use of the newer antibiotic agents in. W. A. Altemeier, M.D., 597
- Surgical lesions of the upper abdomen in the newborn and infant. Clifford D. Benson, M.D., 1131
- Survival shelters, emergency supplies and first aid kits. John J. Grebe, Ph.D., 271
- Sustained pituitary adrenocorticotrophic hormone (ACTH). Earl A. Peterman, M.D., 1010
- Sympathetic predominance, Clinical application of adrenergic blockade in. Fredrick F. Yonkman, M.D., 590
- Syphilis, The present status of the problem of. Louis A. Brunsting, M.D., 48

T

- Take cover! Atomic bomb! Major Reynold A. Atlas, 294
- The impostor—arthritis of the spine. William H. Blodgett, M.D., 1008
- Thrombosis, mesenteric venous, Rectal administration of Dicumarol in a case of. Holbrooke S. Seltzer, M.D., 59
- Treatment of eczematous dermatoses. Alex S. Friedlaender, M.D., and Sidney Friedlaender, M.D., 54
- Treatment of epilepsy, The. Frederic A. Gibbs, M.D., 145
- Treatment of Still's disease with cortisone and gold, The. John D. Chase, M.D., and John M. Wilkinson, M.D., 1026
- Treatment of trichomonas vaginalis vaginitis. R. B. Kennedy, M.D., F.A.C.S., 1053
- Trichomonas vaginalis vaginitis, Treatment of. R. B. Kennedy, M.D., F.A.C.S., 1053
- Tuberculin, old, reactors, Histoplasmin and, in Kent County, Michigan. H. D. Ireland, M.D., 619
- Tuberculosis control program in a mental institution, A. J. L. Isbister, M.D., P. C. Robertson, M.D., A. L. Stanley, M.D., and C. J. Stringer, M.D., 1251
- Tumor detection, The Hillsdale plan for. Arthur W. Strom, M.D., 407

INDEX TO VOLUME 50

Tumors, Parotid gland, and their surgical management. Raymond W. McNealy, M.D., and John W. McCallister, M.D., 398

U

Ulcerative colitis, Chronic, in veterans. Harold J. Kullman, M.D., F.A.C.P., and Phillip E. Schmitt, M.D., 1133

Unsuspected ruptured interstitial pregnancy of eighteen calendar weeks' development. Nicholas J. Kohlerman, M.D., and Harold D. Priddle, M.D., 740

Urethral valves, congenital, Diagnosis and treatment of. R. M. Nesbit, R. L. Thirlby, and F. P. Raper, 1244

Urinary tract, Effect of pregnancy on the. George C. Prather, M.D., F.A.C.S., 41

V

Valves, congenital urethral, Diagnosis and treatment of. R. M. Nesbit, R. L. Thirlby, and F. P. Raper, 1244

Venereal disease control, Application of, in the general health program of the Michigan State Medical Society. Robert S. Breakey, M.D., 1147

Virus as a cause of human cancer. John E. Gregory, M.D., 391

Vulva, Hematoma of the, during labor. Harry Kirschbaum, M.D., and Lloyd Mallin, M.D., 742

W

What is a practical cancer detection program? Frank L. Rector, M.D., 388

Why the necessity for iodized table salt? John L. Giles, C.E., 1145

Y

Your government and you. Carlton Morris, 1051

BLUE SHIELD NEWS

Michigan doctors favor new \$5,000 Blue Shield contract, 32

National Blue Shield Service, Inc., organized, 32

BON SECOURS HOSPITAL CLINIC DAY

Adrenal insufficiency, 625

Anal gland, The, 626

Brief summary of clinical physiology of potassium, 626

Cerebral antispasm, 626

Cervicobrachialgia, 626

Congenital polycystic disease of the kidneys, 627

Diverticula of the stomach and duodenum, 627

Early ambulation, 626

DECEMBER, 1951

Hiatus hernia, 625

Intussusception, 626

Male infertility, 685

Multiple polyposis, 625

Prolapse of gastric mucosa, 625

Surgical treatment of deafness, The, 627

Sympathectomy in arteriosclerosis, 625

Use of blood, plasma, and blood derivatives, 685

Ventricular tachycardia, 627

CANCER COMMENT

American Cancer Society professional education program, 18

Cancer registers are worthwhile, 574

Employment status of the industrial worker with cancer, 988

Modern cancer control, 1104

More unfavorable cancer cure publicity, 854

Proposed experiment in cancer education, A, 1224

Some unsolved public relations problems, 470

Terminal care for cancer patients, 372

Third Michigan cancer conference, 854, 1328

Tumor chemotherapy, 234

COMMUNICATIONS

Abelman, Henry W. (Compliment for "Golden Rule" front cover), 1283

Barnett, E. D., Liberalizing of Blue Cross-Blue Shield benefits, 1064

Blitch, Clifford G., Gorgas Hospital, 202

Burnell, Max R. (appreciation for award presented), 1282

Carr, George R. (medical practice in England), 328

Corbus, Burton R. (Michigan Foundation), 1443

Derbyshire, A. J., Michigan Epilepsy Center, 202

Ellis, Michael E. (Speransky's spinal pumping procedure in rheumatic fever), 536

Herbert, J. Joseph (consultant's services), 1440

Hersey, E. Freeman (MSMS Emergency Medical Service), 814

Himmelberger, Mrs. R. J. (appreciation for services rendered Auxiliary), 1282

Lebold, Olive E. (opportunities for interns and residents), 1285

LeFevre, Wm. M. (diabetes week), 1174

Lichtwardt, Hartman A. (socialized medicine), 1174

Novy, R. L. (MMS x-ray benefits), 1440

Patrick, G. T. (misleading captions), 814

INDEX TO VOLUME 50

- Pattullo, Andrew (W. K. Kellogg Foundation), 1284
 Penberthy, Grover C. (Michigan Volunteer Advisory Committee to Selective Service System), 1442
 Selby, C. D. (appreciation for scroll presented), 1282
 Staudacher, Russell F. (funds for American Medical Education Foundation), 1283
 Towner, Carol (Special issue), 816
 Trim, Kenneth E., Blue Shield Plans, 1064
 Umphrey, C. E. (misuse of Blue Cross), 328

DETROIT PHYSIOLOGICAL SOCIETY

- Application of heat and cold in traumatic injuries, The, 623
 Biosynthesis of the plasma proteins—fact and fancy, 511
 Chemical topography of the human heart in circulatory failure and after digitalization, 622
 Chromatography as applied to the study of the intestinal absorption of amino acids, 750
 Connective tissue alterations in degenerative disease, 65
 Effect of chondroitin sulfate on the proteolytic action of pepsin, The, 624
 Effect of portacaval venous shunt upon bromsulphalein retention, 65
 Experiments on the transplantation of aortic valves, 622
 Formation of prothrombin derivatives from purified prothrombin, The, 510
 Levels of the acids of the tricarboxylic acid cycle in the tissues of normal and diabetic animals, 749
 Lymph drainage of greater and lesser omenta including the stomach (title only), 511
 Microtechnique: essentials of the paraffin method, 65
 Nutritional aspects of growth control in tissue culture, 623
 Observations on the bone marrow in hyperthyroidism and hypothyroidism, 510
 Present status of steroid chromatography in clinical research, 750
 Relation of sodium chloride depletion to urine excretion and water intoxication (title only), 510
 Solubility of bone salt and its relation to calcification, The, 298
 Survey of chromatography techniques, and specific application to problems of drug metabolism, 749
 Transamination in normal and induced states of growth, 297
 Treatment of paroxysmal supraventricular tachycardia with neosynephrine hydrochloride, 297
 Use of small bowel segments as ureters (title only), 510

DETROIT SURGICAL ASSOCIATION

- Acute cholecystitis, 746
 Amputations of the leg, 747
 1466

- Blood transfusion reactions, 747
 Detection of lymph node involvement in neoplastic disease, 299
 Diagnostic accuracy in upper gastrointestinal lesions, 184
 Diagnosis of traumatic intracranial hemorrhage by angiography, The, 183
 Evaluation of sliding bone grafts of the tibia, An, 185
 Intestinal villus in man and laboratory animals, 183
 Management of gastrointestinal foreign bodies, The, 183
 Renal papillary necrosis, 185
 Solitary pulmonary masses, 299
 Subphrenic abscess, 748
 Surgical treatment of massive lymphedema, The, 299
 Use of segments of small intestine as ureters, The, 184
 Use of whole thickness skin graft in the repair of recurrent pelvic prolapse, The, 747
 Vein ligation for the prevention of thromboembolism, 746

THE DOCTOR'S LIBRARY

- Abelmann, Henry W.: Cancer as I see it, 549
 Abramson, Harold A. (editor): Somatic and psychiatric treatment of asthma, 961
 Alvarez, Walter C.: The neuroses, 963
 American College of Surgeons: Surgical forum, 684
 American Diabetes Association: Diabetes guide book for the physician, 547
 American Pharmaceutical Association: The National formulary, 964
 Apperly, Frank L.: Patterns of disease on a basis of physiologic pathology, 962
 Bancroft, Frederic W. (Supervising editor): Surgical treatment of the motor-skeletal system, 1455
 Bortz, Edward L.: Diabetes control, 1454
 Boshes, Benjamin (editor): A review of medicine, 1085
 Bray, W. E.: Clinical laboratory methods, 1189
 Brown, Anson Lee: Technical methods for the technician, 1298
 Buchler, Walter: Parkinson's disease, 221
 Burlingham, Robert: The odyssey of modern drug research, 1187
 Campbell, Meredith, Goettsch, Elvira, and Lyttle, John D.: Clinical pediatric urology, 1187
 Cecil, Russell L., et al (editors): A textbook of medicine, 1186
 Chatton, Milton, Margen, Sheldon, and Brainerd, Henry D.: Handbook of medical management, 1456
 Colonna, Paul C.: Orthopedic surgery, 1082
 Conn, Howard F. (editor): Current therapy, 1951 latest approved methods of treatment for the practicing physician, 961
 DeJong, Russell N.: The neurologic examination incorporating the fundamentals of neuroanatomy and neurophysiology, 430
 Dible, J. Henry: Dible and Davie's pathology, 1298

INDEX TO VOLUME 50

- Dock, William, Snapper, I., and Associates (editors): Advances in internal medicine, 98
- Dorland, W. A. Newman: The American illustrated medical dictionary, 829
- Doyle, Leo: Handbook of obstetrics and diagnostic gynecology, 430
- Fischer, Siegfried: Principles of general psychopathology, an interpretation of the theoretical foundations of psychopathological concepts, 100
- Fodor, Nandor, and Gaynor, Frank (editors): Freud: dictionary of psychoanalysis, 220
- Gilbert, Ruth: The public health nurse and her patient, 1456
- Goodrich, Frederick W., Jr.: Natural childbirth, 220
- Gradwohl, R. B. H., Soto, Louis Benitez, and Felsenfeld, Oscar (editors): Clinical tropical medicine, 1186
- Greenburg, Harold A.: Child psychiatry in the community, 100
- Grimes, John Maurice: When minds go wrong, 829
- Haas, Sidney Valentine: Management of celiac disease, 1084
- Harper, Harold A.: Review of physical chemistry, 1454
- Harris, Philip L., and Kujawski, Wilma (compilers): Annotated bibliography of vitamin E, 683
- Hirsch, Edwin W.: Sexual fear, 546
- Harris, Philip L., and Kujawski, Wilma: Vitamin E, 828
- Hilton, John: Rest and pain (edited by E. W. Walls and Elliott E. Phillipp), 829
- Hollinshead, W. Henry: Functional anatomy of the limbs and back, 547
- Hyman, Harold Thomas: Progress volume to accompany Hyman's integrated practice of medicine, 548
- Kahn, Reuben L.: Serology with lipid antigen with special reference to Kahn and universal reactions, 1187
- Kahn, Samuel: Master your mind, 1454
- Kenyon, Herbert R.: The prostate gland, 548
- Krupp, Marcus A., et al: Physician's handbook, 434
- Kupper, William H.: Physicians' and nurses' concise medical encyclopaedia, 219
- Larkowski, T. M., and Rosanova, A. R.: Hospital staff and office manual, 1188
- Levine, Samuel A.: Clinical heart disease, 1082
- McCurdy, R. N. C.: The rhesus danger, 547
- Macy, Icie G.: Nutrition and chemical growth in childhood, 828
- Majors, Ralph W.: Physical diagnosis, 965
- Marvin, H. M.: You and your heart, 548
- Meigs, Joe V., and Sturgis, Somers H.: (editors) Progress in gynecology, Volume II, 547
- Moorman, Lewis J.: Pioneer doctor, 828
- National Association for Mental Health: Eating problems of children. Eating patterns of children, 1188
- National Association for the Prevention of Tuberculosis: Tuberculosis index and abstracts of current literature, 100
- Nesbit, Reed M.: Your prostate gland, 546
- Ogle, Kenneth N.: Researches in binocular vision, 219
- Pohl, John F.: Cerebral palsy, 99
- Prosser, Edith M.: Manual of massage and movements, 1084
- Ratner, Bret (and sixteen contributors): Allergy in relation to pediatrics, 1455
- Reveno, William S.: 711 medical maxims, 1189
- Rice, Thurman B.: Low-sodium diet, 1300
- Rickles, N. K.: Exhibitionism, 99
- Ritvo, Max: Chest x-ray diagnosis, 963
- Saul, Leon J.: Bases of human behavior, 963
- Shanks, S. Cochrane, and Kerley, Peter (editors): A textbook of x-ray diagnosis, 99, 828
- Sherwood, Noble Peirce: Immunology, 1188
- Smith, Clement A.: The physiology of the newborn infant, 965
- Smith, Homer W.: The kidney structure and function in health and disease, 684
- Sodeman, William A. (editor): Pathologic physiology: mechanisms of disease, 98
- Strecker, Edward A., Ebaugh, Franklin G., and Ewalt, Jack R.: Practical clinical psychiatry, 1083
- Sweet, Richard H.: Thoracic surgery, 100
- Thorek, Philip: Anatomy in surgery, 964
- U. S. Naval Medical School: Color atlas on pathology, 219
- Van Alyea, O. E.: Nasal sinuses, 432
- Washington Institute of Medicine: Antibiotics and chemotherapy, 1188
- Watson, Ernest H., and Lowrey, George H.: Growth and development of children, 828
- Wood, Paul: Diseases of the heart and circulation, 962
- Youmans, John B. (editor): Medicine of the year, 683

EDITORIAL COMMENT

- Apropos the ambitions of Truman, Ewing and Altmeyer, 858
- Doctors clean house, 1226
- Don't slam the door, 1116
- Family doctor, The, 24
- Health insurance, 856
- "Health scheme hits young doctors," 858
- Lesson for all, A, 1116
- Let out, 712
- Maternity patients in hospital, 1116
- Medical incomes, 1342
- Medicine did all right even before Mr. Ewing, 468
- Obligations of Society membership, 576
- On prescribing too much too often, 856
- Oscar needs to be told, 238
- Profession in revolt, 24
- Slander, 24
- Time is now, The, 238
- Too busy to celebrate, 1342

INDEX TO VOLUME 50

We can help ourselves, 1344
 What price stress? 1342
 Why veterans lack doctors, 1226
 Without benefit, 576

EDITORIALS

Always our very best, 1057
 Another Michigan first, 408
 Atom in war and peace, The, 304
 Atomic war and defense, 304
 Balanced economy, 753
 Blue Cross-Blue Shield month—September, 1951, 897
 Blue Shield advertising, 896
 Cancer education, 408
 Church and socialized medicine, The, 897
 Co-operation—good public relations, 188
 Council, The, 1264
 Diabetes detection, 1153
 Doctor's income, The, 410
 EMIC, 410
 Fifty years of accomplishment, 1430
 Hospital utilization, 752
 Inconsistent, 1152
 Infectious diarrhea, 897
 Lest we forget, 302
 Medical education, 68, 1429
 Medical examinations, 303
 Medical incomes, 514
 Medical incomes—take home pay, 1056
 Michigan Department of Social Welfare, 1262
 Michigan Medical Service over 2,000,000 subscribers, 68
 Michigan proposes, 514
 Michigan Social Welfare Commission, 896
 New councillor, 304
 New type of co-ordinated teaching at 1952 MCI, 1057
 President-elect (R. J. Hubbell), 1264
 Pure libel against medicine, A! 188
 Rheumatic fever and arthritis, 1056
 Sabotage, 302
 Settled at last, 1152
 Sixty-five retired person problem, The, 1429
 Solvent!!! 630
 State hospital administration, 1430
 Too large? 68
 United-Red Feather, 1153
 Wayne University Medical School, 515
 We must not forget, 69
 We must re-evaluate, 190
 We salute—Dr. Lunette I. Powers, M.D., and American Medical Association, 514
 Workmen's pensions and industrial physicians, 630
 1468

IN MEMORIAM

Blashill, James B., 1438
 Dempster, James Herbert, 1066
 Dixon, Robert L., 1438
 Dock, George, 1286
 Hodges, Kenneth P., 1066
 Kellogg, Will Keith, 1286
 Mitchell, W. Bede, 1438
 Pyle, Henry John, 1438
 Rundell, Annie Stevens, 330
 Shaw, George A., 1439
 Wight, William G., 812

MICHIGAN'S DEPARTMENT OF HEALTH

Michigan's Department of Health, 80, 198, 326, 414,
 532, 666, 808, 946, 1060, 1166, 1278, 1436

MICHIGAN POSTGRADUATE CLINICAL INSTITUTE

Michigan Postgraduate Clinical Institute, Fifth Annual,
 70
 Outline of program, 1260

MICHIGAN STATE MEDICAL SOCIETY

Annual session of the Council, 306
 Eighty-sixth annual session—official call, 525
 Annual reports, 759, 928
 Annual session echoes, 1332
 Highlights, 1271
 House of Delegates—order of business, 528
 House of Delegates—personnel, 662
 House of Delegates—reference committees, 758
 Information, 527
 Preliminary program, 754
 Program, 899
 Tentative outline of 1951 Assembly speakers, 530
 Woman's Auxiliary program, 757
 Past presidents, 1866-1950, 526
 Roster 1951, 770

MILITARY MEDICINE

Armed Forces Medical Policy Council established by
 Defense Department, 136
 Army develops perfect substitute for morphine, 138
 Army health record at high level, 996
 Army to recall 165 dental reservists in January, 1350

JMSMS

INDEX TO VOLUME 50

Civilian medical and dental care for active duty air force personnel, 996
 Commission receives AMA views on medical aspects of training program, 1122
 Doctor draft program to consider civilian needs, 136
 Doctor shortage deplored, 476
 Draft-doctors, 476
 Korea wounded return to duty, 1122
 Low death rate of enemy prisoners due to army medical service treatment, 860
 Selective service system, Information Bulletin Vol. 1, No. 4, 476
 UMT Commission opposes servicemen's disability benefits for trainees, 1350
 United States-Canada liaison teams to standardize army medical instruction and equipment, 138

MISCELLANEOUS

Admission policy at University of Michigan, 20
 AMA aid to medical schools, 22
 American Medical Association (100th Annual Session), 700
 Burns, Bill, 1206
 Conference of presidents, 702
 Formula for freedom, 1270, 1432
 Grand View Hospital case, 1161
 Industrial Health Day successful, 472
 Into the second century with the American Medical Association, 521
 Leading in learning, 1154
 MSMS County Secretaries—Public Relations Conference, 368, (1952 program) 1452
 MSMS recognizes health leadership in industry, 1158
 Medical education—your responsibility, too, 466
 Michigan Health Council—A parade of projects, 1266
 Michigan Health Council honors MSMS, 844
 Michigan industrial health day, Second, 78, 134
 Michigan Postgraduate Clinical Institute—1951, 474
 Michigan postgraduate program in medicine, 324, 1054
 Michigan Society for Crippled Children and Adults, 191
 Michigan State Medical Society moves into its new "home," 846
 Michigan's foremost family physician for 1950, Lunette I. Powers, M.D., 517
 Mount Carmel Mercy Hospital Clinic Day, 1453
 Poliomyelitis Respirator Center, 1324
 Quo vadimus?—Paul R. Hawley, M.D., 1326
 Second annual heart day offers new hope for hearts, 458
 TV and medicine, 411
 Television—another Michigan "first," 132
 "To Save Your Life"—Michigan State Medical Society motion picture, 1118
 To the physicians of Michigan (Elmer L. Henderson, M.D., president, American Medical Association), 520
 Two TV and twenty-six radio shows feature Michigan medicine, 712
 United States Senator Arthur H. Vandenberg of Michigan, 572
 University of Michigan Medical School, Brief review courses for practicing physicians, 1952, 1434
 Wayne University College of Medicine:
 Postgraduate continuation courses, 320, 943
 Postgraduate course in early detection of cancer, 322, 944
 Wilson, Frank, granted gold heart award, 710
 With firm and regular step (Blue Cross-Blue Shield), 632
 Woman's Auxiliary to the Michigan State Medical Society, 364

POLITICAL MEDICINE

AFL union opposes health bill, 28
 Another cruel hoax, 862
 Australia fails to reduce sickness, 1110
 Communications (Oscar R. Ewing and Elmer L. Henderson, M.D.), 578
 Doctor shortage, 1108
 Ewing proposes "free" hospitalization for seven million aged, 1110
 Faithful doctors vs. British bureaucracy, 1108
 Federal Security Agency appropriation enacted, 1112
 Foes of health plan invited to do better, 862
 Hospital care for aged urged, 862
 Let's remember the sea gulls! 28
 Medical problem in Australia, The, 1112
 New senate legislation, 1346
 Panel majority urges no restrictions on union health plans; industry dissents, 1348
 Political medicine, 1110
 Socialized medicine gains from CIO award, 1348

PRESIDENT'S PAGE

Beacon or torch, 300
 Family physician is central figure in MRFCP, 1055
 Leadership and service, 628
 Little errors, 512
 Outmoded? 409
 Present or accounted for, 751
 Roll call, 895
 Seals, 186
 Shadows, 66
 Topside medical public relations at Mackinac, 1261

INDEX TO VOLUME 50

PUBLIC RELATIONS

Closer ties between various professions urged, 1322

WOMAN'S AUXILIARY

Woman's Auxiliary, Silver Anniversary, 900

YOU AND YOUR BUSINESS

AEC offers eight fellowships in industrial medicine, 1222
Aid American Medical Education Foundation, 562
Alcoholism, 126
American Board of Obstetrics and Gynecology, 126
American Medical Education Foundation fund, 850
And all this under private practice! 568
Army orders dual purpose buses for passenger and ambulance use, 360

Business group votes down Ewing old age plan, 1218
By-laws amended re life membership, 16

Child psychiatry, 456
Committee on union health problems, 1100
Conference on physician placement, 1318
Confidential communications, 562
Congress exempts VA and PHS medical personnel from layoffs, 1102
Consultant's services, 1318
Courses in medical economics, 456

Eight items from MSMS to AMA, 976

Facts about AMA dues for 1951, 130
Featured subjects for 1951, 12
Fire chief for life, 993
Future dates for you, 1218

Governor reappoints osteopath; Senate rejects, 852
Great growth of voluntary plans, 1314

Heart day—March 17—Detroit, 124
Highlights of executive committee of the Council, 12, 118, 358, 454, 564, 704, 848, 1098, 1212, 1316
Hospital accreditation, 1216
Hospital standardization program of the American College of Surgeons, 14

Indiana sues to force Ewing to resume U.S. welfare payments, 1100

Industrial Health Day—April 4—Detroit, 126; May 7—Flint, 1316

Intensive course at Michael Reese Hospital, 570
"It's your life," 992

Lilly entertains Wayne University medical students, 994
Literature and films on atomic energy, 128

MPCI—March 14-15-16—Detroit, 124
MSMS Annual Session, Grand Rapids, 356, 562
MSMS Cancer Committee office moved to Jackson, 16
Medical meetings and clinic days, 12, 118, 704, 848, 1102, 1220, 1314
Michigan Clinical Institute (1952), 980
Michigan Nursing Center Association, 568
Military notes, 1102
Misrepresentation, 1216
Mysterious insurance forms, 126

Open letter to MSMS members, An, 564
Orchids to Bennett, 982
Osteopath appointee not confirmed, 708
Outstanding medical exhibit for AMA meeting, 852

Policy re extent of committee responsibility, 356
Prepaid hospital care plans seen threatened by abuses, 1222
Professional incomes (medical), 982

Reporting of contacts by physicians and laboratories, 978
Revisions in MCCC fees, 982
Rheumatic fever control centers in Michigan, 708

S-2171, Voluntary health insurance, 1220
School buses to be used as ambulances, 356
Selection of Michigan's foremost family physician, 562
Seniority decides the presidency, 126
Sixteen thousand in ninety foreign lands drawing \$6 million a year, 1320
Socialism is the real issue, 1218
Surveys on medical care, 1218

Tax exemptions for retirement insurance premiums, 984
Third Michigan cancer conference, 982
This is Blue Cross-Blue Shield month, 980
Truman vetoes benefit bill, criticizes VA non-service care system, 1100

Voluntary sickness cover plans show big gains, 1318

What is a clinic? 980
Woman's Auxiliary board meeting, March 14—Detroit, 124
Word gets around about MSMS activities, 1314

"Your medical mailbox," 994

The Journal

of the Michigan State Medical Society

Our Fiftieth Year

LIBRARY

Wayne County Medical Society
ST. PAUL, MINN.



Volume 50

January, 1951

Number 1



Some of the Many Illustrious
Speakers on the Program
of the 1951

**MICHIGAN
POSTGRADUATE CLINICAL
INSTITUTE**



Michigan Postgraduate Clinical Institute

2020 Olds Tower, Lansing 8, Michigan

Dear Doctor:

You are invited to attend the fifth annual

MICHIGAN POSTGRADUATE CLINICAL INSTITUTE

**BOCK-CADILLAC HOTEL, DETROIT
MARCH 14-15-16, 1951**

This three-day continuation course is designed for Doctors of Medicine who wish to remain up-to-date in the progress of their swiftly moving science.

The grand array of 35 top teachers assures six intensely interesting Assemblies from Wednesday morning through Friday afternoon.

The diversified subjects, covering every major specialty, make certain that every registrant will refresh his mind and increase his knowledge in the art and science of Medicine.

Only information of practical value in everyday practice will be found at the Michigan Postgraduate Clinical Institute. You will gain much from the experience.

We urge your presence in Detroit at the 1951 Michigan Postgraduate Clinical Institute.

Sincerely,

Renton T. Corbus

E. E. Corbus, M.D., Chairman,
Committee on Arrangements

L. Fernald Foster

L. Fernald Foster, M.D.
Secretary

Top Row: Allan G. Barnes, M.D., Columbus, Ohio; Russell S. Boles, M.D., Philadelphia; David A. Boyd, Jr., M.D., Rochester, Minn.

Middle Row: Clement A. Smith, M.D., Boston, Mass.; Stanley Gibson, M.D., Chicago; W. Paul Holbrook, M.D., Tucson, Ariz.

Bottom Row: Francis D. Moore, M.D., Boston; Charles A. Ragan, Jr., M.D., New York City; Willard O. Thompson, M.D., Chicago.

See Program on Page 66

*known
and
relied on
the world over*



ADRENALIN (epinephrine, Parke-Davis) is today, as it has been for many years, one of the most versatile and useful drugs, known and used the world over. Introduced to the medical profession by PARKE-DAVIS in 1901, ADRENALIN is widely used in many conditions — bronchial asthma, serum sickness, the Adams-Stokes syndrome, and anesthesia accidents.

PARKE, DAVIS & CO

ADRENALIN

Circulatory stimulant, vasoconstrictor, resuscitant, and hemostatic, this pure crystalline hormone is one of the truly basic drugs — an invaluable aid in office, in hospital, and in clinic. It is an important adjunct in local anesthesia, valuable in arresting superficial hemorrhage, and a standby for decongestion of engorged mucous membranes.

ADRENALIN is available as ADRENALIN CHLORIDE SOLUTION 1:1000, ADRENALIN CHLORIDE SOLUTION 1:100, ADRENALIN IN OIL 1:500 and in a variety of forms to meet all medical and surgical requirements.

S COMPANY



DIETRICH

For the *Finest* in Ambulance Service *By Land or Air*

Beechcraft Bonanza Air Ambulance — Smooth, quiet, comfortable riding, at a cruising speed of 172 M.P.H., with no high speed sensation. Rates 25c per Air mile.



NEW PACKARD AMBULANCES

Equipped with:
Stephenson Resuscita-
tors
Ultraviolet Sterilizing
Lamps
Two Way Radio Tele-
phones
Hospital Type Cots

Another Dietrich Service OXYGEN THERAPY EQUIPMENT

Rented — Sold — Serviced — Day or Night

• Oxygen Tents Refrigerator Cooled • Oxygen Regulators

• B-L-B Masks • Humidifier Regulators

• Nasal Catheters

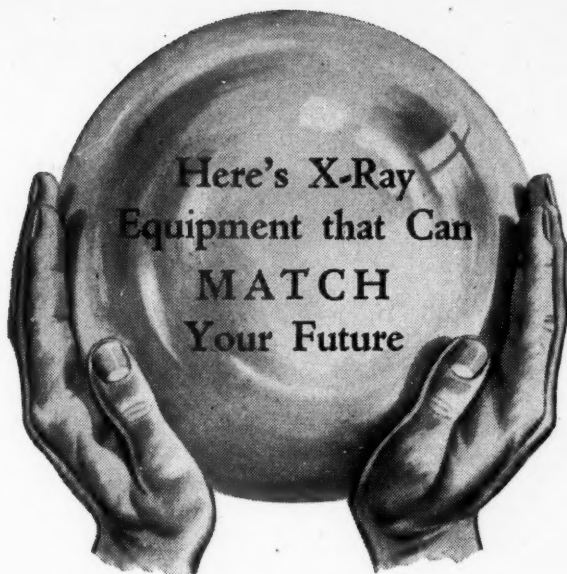


UNiversity 2-6532

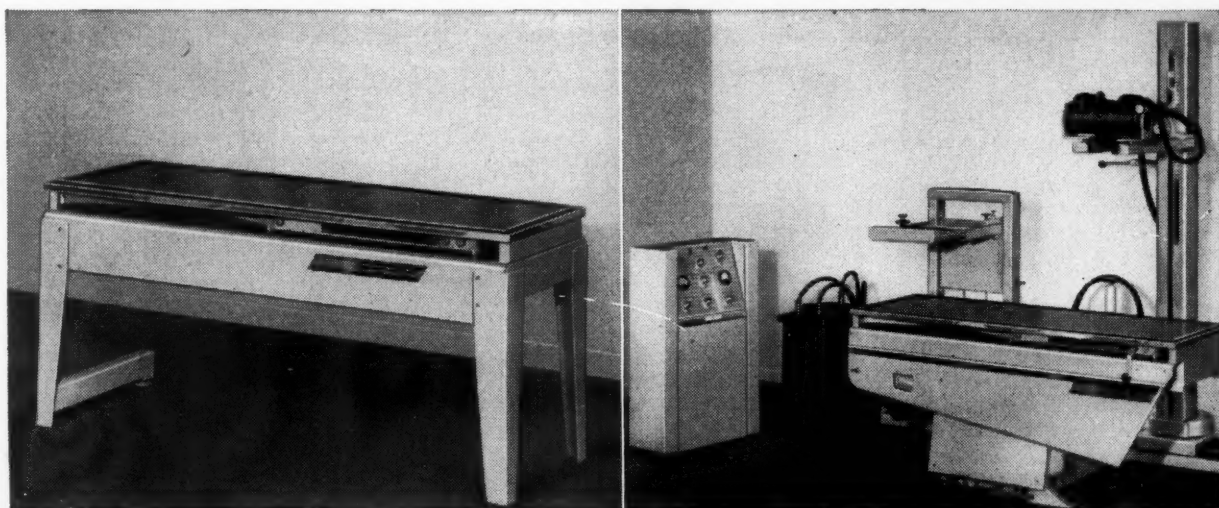
16941 HAMILTON AVE.

DETROIT 3

Specialized Transportation Service Since 1919



GE MAXICON meets the medical profession's long-felt need for x-ray equipment developed to grow with an expanding practice, providing just the x-ray facility required... unit by unit as needed!



From this... to this... in a few easy steps!

Bucky table to motor-driven combination unit! Comprised of a number of components that can be assembled in various combinations — the Maxicon series have a wealth of utility wherever diagnostic x-ray is employed. The Maxicon covers the range of diagnostic x-ray apparatus from the horizontal x-ray table to the 200-ma, two-tube, motor-driven combination unit.

cover what it can do for you. Ask your GE representative or write

**GENERAL  ELECTRIC
X-RAY CORPORATION**

Check the remarkable flexibility of the Maxicon. Dis-

Direct Factory Branches:

DETROIT — 5715 Woodward Ave.
MILWAUKEE — 547 N. 16th St.
DULUTH — 3006 W. First St.

Resident Representatives:

FLINT — E. F. Patton, 1202 Milbourne
E. GRAND RAPIDS — J. E. Tipping, 1044 E. Keneberry Way
MUSKEGON — S. J. Zavodny, 1212 Jefferson Avenue

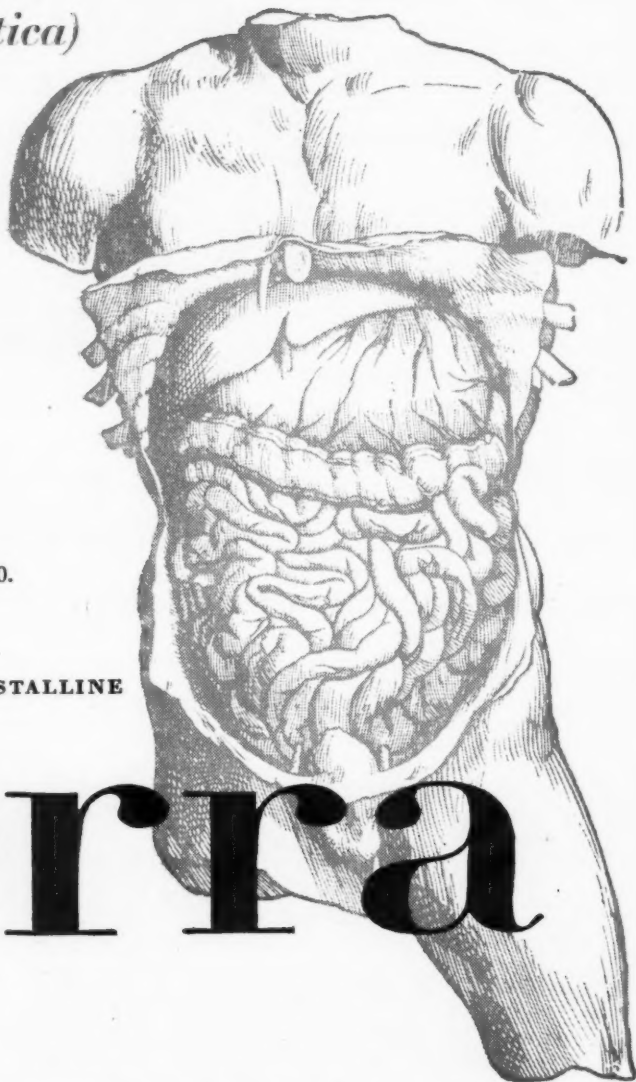
POSITIVE CLINICAL FINDINGS IN CERTAIN

In Amebiasis (E. histolytica)

"In daily doses of 1.0 and 2.0 grams by mouth for ten days, terramycin therapy resulted in the disappearance of *E. histolytica* from the stools of all but one of 22 patients.

Parasitic relapse occurred in this individual on the eleventh day after treatment, whereas in the remaining 21 subjects, the stools have remained negative to date."

Most, H., and Van Assendelft, F.:
Ann. New York Acad. Sc. 53:427 (Sept. 15) 1950.

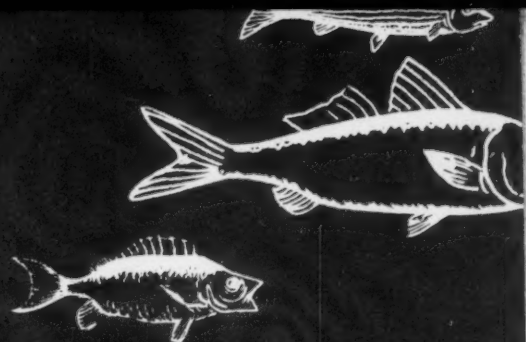


Terra

CRYSTALLINE

Clinical findings covering a wide range of bacterial and rickettsial as well as several protozoan infections indicate that:

1. *Terramycin may be highly effective even when other antibiotics fail.*
2. *Terramycin may be well tolerated even when other antibiotics are not.*



Provides natural
vitamin A... as
special fat-free
concentrate of
fish liver oil...
no fish taste
or odor.

Again¹ and still again² new studies show how "oil-in-water" vitamin solutions such as developed by the Research Laboratories of the U. S. Vitamin Corporation* make possible speedier and more complete absorption and better utilization of vitamin A when given in aqueous solutions as compared to oily solutions. Particularly suggested in patients with dysfunctions of the liver, pancreas, and biliary tract which interfere with utilization of fats; in celiac disease and certain other diarrheal states.

AQUASOL VITAMIN A DROPS

provides per gram (approx. 1 cc.)
50,000 U. S. P. UNITS
of NATURAL VITAMIN A in
AQUEOUS SOLUTION.

FIRST AND ONLY AQUEOUS VITAMIN A



ACCEPTED BY THE COUNCIL

Send for samples.

U. S. VITAMIN CORPORATION

CASIMIR FUNK LABORATORIES, INC. (affiliate)

250 E. 43rd St. • New York 17, N. Y.

*U. S. Patent No. 2,417,299.

1. Lewis, J. M., Cohan, S. Q., and Messina, A.: Pediatrics 5:425, 1950.
2. Lewis, J. M., and Cohan, S. Q.: Med. Clinics North Amer., March 1950.

"The value of
sulfonamide mixtures
in reducing
crystalluria and
renal complications
is based on

undisputed experimental evidence

"It has been confirmed
by several independent
groups of investigators
in rigorous
practical tests at
the bedside."

(Lehr, D.: J.A.M.A., Feb. 5, 1949.)



*for safer,
effective, speedy,
highly palatable
sulfonamide
therapy*

tri-sulfameth



Each 5 cc. of syrup (approx. one teaspoonful)
... or each tablet contains 0.5 Gm. of sulfa compound:

SULFAMETHAZINE	0.165 Gm.
SULFADIAZINE	0.165 Gm.
SULFAMERAZINE	0.165 Gm.
SODIUM CITRATE*	0.5 Gm.

*not contained in Tri-Sulfameth Tablets

Samples of
Tri-Sulfameth
on request



CASIMIR FUNK LABORATORIES, INC.
affiliate of U. S. Vitamin Corporation
250 East 43rd Street, New York 17, N. Y.



THE LILLY CODE

To provide the profession with medicinal products of highest quality.

To contribute to the progress of medicine through research.

To issue product information through professional channels only.

Lilly

ELI LILLY AND COMPANY · INDIANAPOLIS 6, INDIANA, U.S.A.

ELI LILLY AND COMPANY
INDIANAPOLIS 6, U.S.A.

To all who have made possible our years
of growth—particularly to physicians
and the many who serve medicine—and to
the American system of economy, which
has given us the opportunity to progress,
we and our associates extend deep and
humble gratitude on the occasion of the
seventy-fifth year of our company.

Eli Lilly
Chairman of the Board
J. N. Lilly
President



RESEARCH • MEDICINE • PHARMACY

*Dedicated to the sciences with which
Eli Lilly and Company is allied in a mutual endeavor
to improve medical care.*

Refresh...add zest
to the hour



Index to Advertisers

Abbott Laboratories	17	Lederle Laboratories	25
American Meat Institute	81	Lilly, Eli, & Co.	facing page 32
American Medical Association	16	Mead Johnson & Co.	Inside Back Cover
Ames Co., Inc.	104	Medical Arts Surgical Supply Co.	79
Ann Arbor School	99	Medical Protective Co.	101
Ar-Ex Cosmetics, Inc.	26	Medical Supply Co. of Detroit	97
Ayerst, McKenna & Harrison, Ltd.	21	Merck & Co., Inc.	29
Barry Laboratories	Back Cover	Milwaukee Sanitarium	Back Cover
Birtcher Corporation	90	Noble-Blackmer, Inc.	91
Borden Co.	15	North Shore Health Resort	89
Camel Cigarettes	19	Parke, Davis & Co.	Inside Front Cover, 1
Canada Dry Ginger Ale	88	Pfizer, Chas., & Co.	6, 7
Central Laboratories—Detroit	93	Philip Morris & Co.	27
Central Laboratory—Saginaw	91	Physicians Casualty Association	93
Chicago Medical Society	87	Pogue, Mary E., School	10
Classified Advertising	102	Professional Management	99
Coca-Cola	103	Radium Emanation Corporation	83
Cook County Graduate School of Medicine	96	Randolph Surgical Supply Co.	31
Coon, D. R., Co.	86	Roman Cleanser	96
David-Smith Medical and Dental Agency	102	Rowley, E. H., Co.	101
Del Vista Sanitarium	100	Rupp & Bowman Co.	82
"Desert-Air" of Detroit	91	St. Joseph's Retreat	85
Detroit Creamery	92	Schering Corporation	13
Dietrich Ambulance Service	2	Searle, G. D., & Co.	77
General Electric X-Ray Corporation	5	Tutag, S. J., & Co.	30
Hack Shoe Co.	95	U. S. Vitamin Corporation	facing page 16
Hartz, J. F., Co.	23	Vernor's Ginger Ale	89
Haven Sanitarium	87	Winthrop-Stearns, Inc.	9
Homewood Sanitarium	83	Wyeth, Inc.	11
Hotel Olds	20	Zemmer Co.	30
Ingram, G. A., Co.	82, 85		
Kilgore & Hurd	94		



Handier
than ever
new
UNIVERSAL MODEL
CLINITEST
(BRAND)
urine-sugar
analysis set

Optional Tablet Refill
Sealed in Foil (illustrated)
or Bottle of 36

- complete
- compact
- clinically dependable

The attractive new plastic case, hardly larger than a cigarette package, includes complete facilities for urine-sugar detection. Your diabetic patients, long accustomed to depend upon the rapidity, accuracy and convenience of *Clinitest* (Brand) Reagent Tablets, will find the new Universal Model (No. 2155), with optional tablet refills, handier than ever.

Clinitest, reg. trademark

CLINITEST Urine-sugar Analysis Set
UNIVERSAL MODEL No. 2155

Contents:
10 CLINITEST (Brand) Reagent Tablets
(Sealed in Foil)
Instructions and Analysis Record
Test tube and Dropper
CLINITEST (Brand) Color Scale

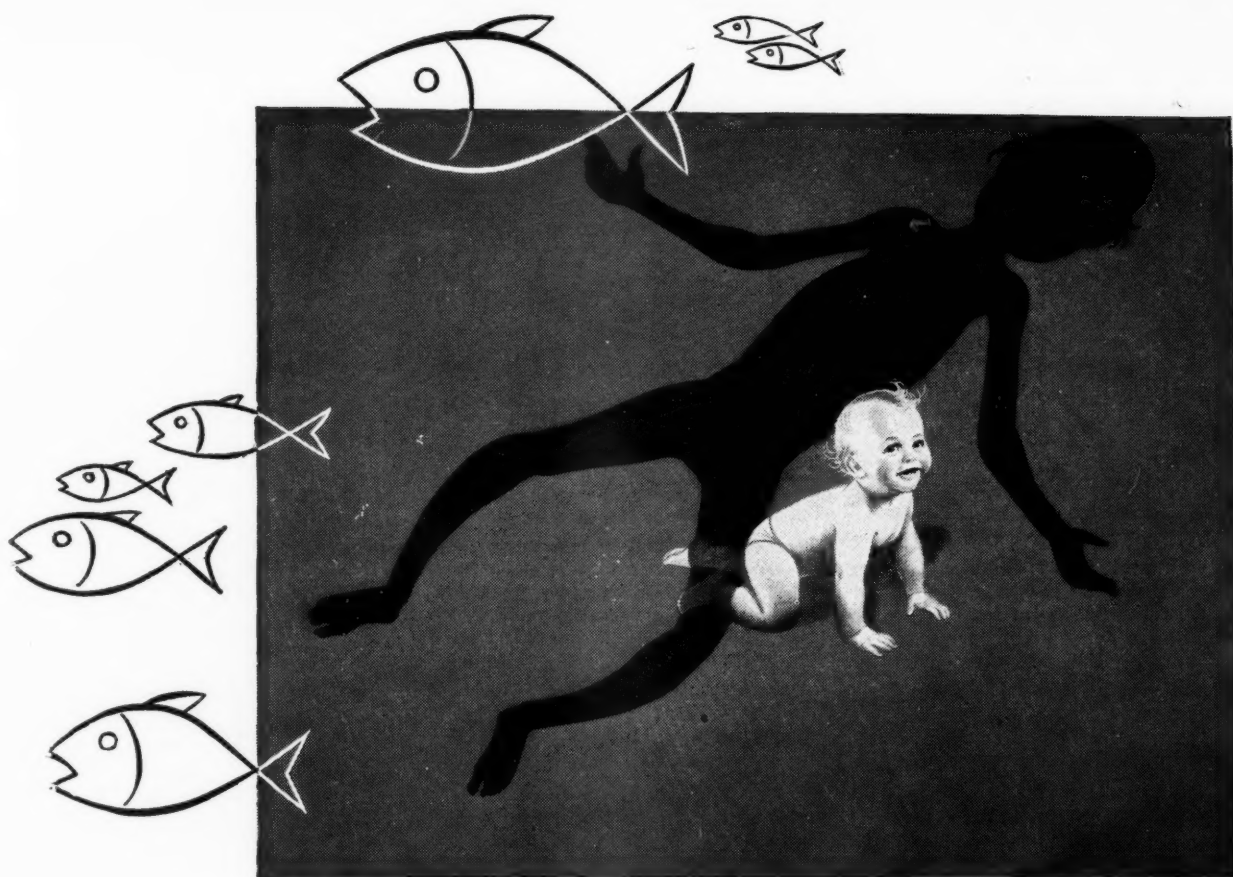
may be refilled with:
Sealed in Foil tablets (from No. 2157)
or bottle of 36 tablets (No. 2107)

Clinitest (Brand) Urine-sugar Analysis Set (No. 2106) with the bottle of 36 tablets will continue to be available.



AMES COMPANY, INC., ELKHART, INDIANA

Ames Company of Canada, Ltd., Toronto



Supplements the sun... *removes the shadow of* **RICKETS**

Rickets may be found in apparently healthy and well nourished infants due to an insufficient intake of vitamin D plus inadequate exposure to ultraviolet rays.

It is now generally accepted that a vitamin D supplement should be given regularly not only to infants but to older children and adolescents. Mead's Oleum Percomorphum

With Other Fish Liver Oils and Viosterol is useful for this purpose.

Mead's Oleum Percomorphum

1. Is a highly potent† source of natural vitamins A and D.
2. May be given in drop doses that are easily administered and well tolerated, and is supplied in capsule form also.
3. Has a background of sixteen years of successful clinical use.

†Potency: 60,000 U.S.P. units of vitamin A and 8500 U.S.P. units of vitamin D per gram. Each drop supplies 1250 units of vitamin A and 180 units of vitamin D; each capsule, 5000 units of vitamin A and 700 units of vitamin D.

Supplied in 10 cc. and 50 cc. bottles; and in bottles of 50 and 250 capsules.

SPECIFY
MEAD'S

MEAD JOHNSON & CO.
EVANSVILLE 21, IND., U.S.A.



ALLERGY . . .

The Barry Way

Applicability

IN EVERY EVERYDAY PRACTICE—You can use the time-proven "Test Before You Treat" method. Have *Specific* hypo-desensitization material prepared according to your patient's own skin test reactions and history. Send your skin test reactions to BARRY and write today for information about the skin testing set designed for your practice.

BARRY
Laboratories, Inc.

Free Booklet—
Principles of Allergy
Diagnosis and Desensitization

20 years of clinical experience
DETROIT 14, MICHIGAN

MILWAUKEE SANITARIUM Wauwatosa, Wis.

For NERVOUS DISORDERS

Maintaining highest standards for more than half a century, the Milwaukee Sanitarium stands for all that is best in the care and treatment of nervous disorders. Photographs and particulars sent on request.

Josef A. Kindwall, M.D.
Carroll W. Osgood, M.D.
William T. Kradwell, M.D.
Benjamin A. Ruskin, M.D.
Lewis Danziger, M.D.
Russell C. Morrison, M.D.
Robert A. Richards, M.D.

G. H. Schroeder
Business Manager

COLONIAL HALL—
One of the 14 Units in "Cottage Plan."



